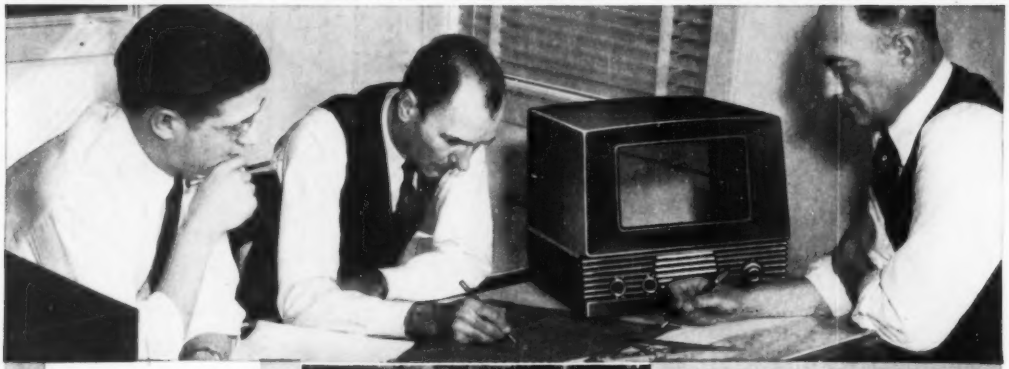
MODERN PLASTICS

OCTOBER 1949

It pays to use your custom molder's know-how

says Philco, meeting low-cost TV demand

No. 10 in a series on Plastics Skill at Work . . .



PROJECT:
Twelve-pound television receiver cabinet in one piece

CUSTOMER:
Philco Corporation
Philadelphia, Pa.

MOLDER:
American Insulator Corporation

MATERIAL:
Durez mottle phenolic plastic

VERIFIED ACCURACY. Sample of finished molding is turned over to engineers for checking all measurements according to Philco specifications. Photo shows cabinet as received from press operator.

SIMPLE PRODUCTION. Cabinet is ejected from hydraulic press at custom molder's plant with all holes, lugs and bosses molded in. Smooth, glossy surface is integral and requires no finishing operations.

● Whenever a salesman in any of the thousands of Philco dealers' showrooms starts a sales talk on this new televison model, he is demonstrating the result of manufacturer-molder cooperation.

And whatever *you* make, wherever it is used, whoever buys it, there is very likely in your product a place to use a custom-molder's know-how as successfully as Philco. Lower material costs, economies in finishing, faster production, better appearance, or longer product service are among the potential benefits.

Philco is familiar with all these as a big user of phenolic plastics for years. Although the cabinet of this receiver was to be a complicated one-piece form weighing no less than 12 pounds, they confidently handed the problem of producing it to well-known molders. Shaped in American Insulator's presses, the housing needs no machining, no gluing, almost no finishing . . . and because it is Durez mottle it has a rich, wood-colored finish of permanent natural luster. Quality of performance both visual and aural is safeguarded by the high dielectric strength of the Durez.

The valuable services of skilled custom molders, as well as experienced Durez phenolics specialists, are at your call for consultation and planning.

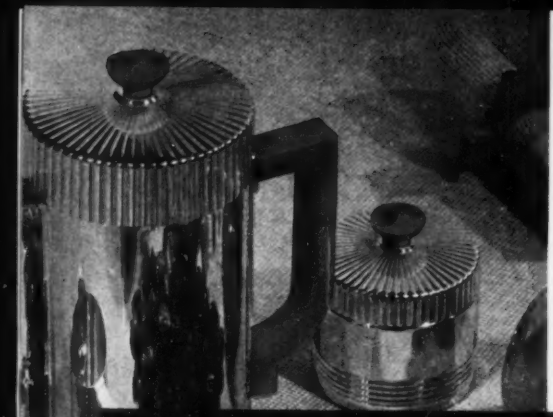
A new hit with plastics users everywhere is the handy "Durez Check-Chart." Write for yours. Durez Plastics & Chemicals, Inc., 1210 Walck Rd., N. Tonawanda, N. Y.

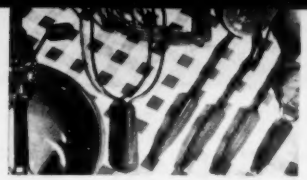
DUREZ

PHENOLIC RESINS

- MOLDING COMPOUNDS
- INDUSTRIAL RESINS
- PROTECTIVE COATING RESINS

PHENOLIC PLASTICS THAT FIT THE JOB





In the *Handling* of Housewares

Catalin is So Right!

It saves — It sells — It serves . . . and because Catalin does all these better than any other handle material, it is preferred by manufacturer, retailer and consumer!

CATALIN IS COLOR — Pure color — All color. Life-lasting, gleamingly brilliant and perfect in matching values! Its beauty as enhanced thru design is incomparable.

CATALIN IS STRONG — It is both rugged and resistant. It can take abuse. It won't distort or soften and it won't burn. Catalin is safe. It is sanitary, resists acids, cleansers, grease and cleans clean!

CATALIN IS ECONOMICAL — Due to low mold costs, highly developed quantity casting techniques and advanced production methods, Catalin presents no price problem. It is ideal for holloware, kitchenware, carving sets, cutlery, etc.

CATALIN IS BEST — Today, after more than twenty years, the housewares' industry continues to regard Catalin, the gem of plastics, as its one, *Best* handle material! To the manufacturer and retailer, Catalin is an important sales factor. To the consumer, it is a buying force. So — for all-around pre-eminent satisfaction, insist upon Catalin — and specify it by name!

Our service staff welcomes the opportunity to assist manufacturers. Inquiries invited!

CATALIN CORPORATION OF AMERICA
ONE PARK AVENUE, NEW YORK 16, N. Y.

MODERN PLASTICS*

VOLUME 27 OCTOBER 1949 NUMBER 2

CONTENTS

GENERAL

Moral in a Plastic Bottle (Editorial) 5

Success Is in Sight for Reinforced Polyesters 69
Improvements in materials and processing methods have opened new markets

Deodorizer Dressed Up in Acetate 77
Flame-resistant housing for electric unit approved by Underwriters' Laboratories

Blade Sales Zoom — in Plastics 78
Another manufacturer adopts the popular plastic dispenser package

Vacuum Cleaners Use More Plastics 80
Examples of how plastics are used to improve and beautify electric appliances

What's New in Vinyl Spread Coating? 82
The methods and equipment used in the vinyl coating industry. Fourth of a series

Acrylic and Vinyl in The Shamrock 86
Famous new hotel installs acrylic lighting fixtures and vinyl flooring

Embedded by Compression Molding 88
A new process for molding objects in clear acrylic

Wood Waste Moldings Find New Markets 90
A mixture of sawdust and phenolic resin is used to mold shoe-last blanks, hamper tops, hangers, and toilet seat cores

Plastics Products 92
A selection of new items with utility or sales appeal obtained through plastics

Car Window Screens 144

Polystyrene Playboard 146

Make-up Guide 148

Tags for Fur Coats 150

Magnifier Sales Boosted 152

Toy Plane Weighs ½ Ounce 154

Nasal Spray 156

PLASTICS ENGINEERING

Meshed Multi-Screw Compounder-Extruder 97

General-Purpose Steel for Machining and Hobbing 105

TECHNICAL

Agricultural Residue Flours as Extenders in Phenolic Resin Glues for Plywood 111
by R. V. Williamson and E. C. Lathrop

Nylon As a Bearing Material 114
by Dr. Russell B. Akin

DEPARTMENTS

Plastics Digest 118

U. S. Plastics Patents 122

New Machinery and Equipment 130

Books and Booklets 134

Plastics Stock Molds 140

Production of Plastics Materials 142

The Plastiscope 178
News of the Industry; Predictions and Interpretations; Company News; Personal; Meetings

PUBLICATION OFFICE: Orange, Conn. Executive and Editorial Office: 122 E. 42nd St., New York 17, N. Y. Published each month by Modern Plastics, Inc. Entered as second class matter, at the Post Office at Orange, Conn., under the act of March 3, 1879.

Copyright 1949 by Modern Plastics, Inc. All rights reserved.

Subscription $5.00 a year, $8.00 for two years in the U. S., its possessions and South America. Canadian subscriptions $5.50 a year, $9.00 for two years. All other countries $6.00 a year, $10.00 for two years, payable in U. S. currency. Price of this issue 75¢ per copy.

*Reg. U. S. Patent Office.

Wire THAT'S AS BRIGHT AS THE LIGHTS!

. . . a new development possible only because of Geon resin

IT'S true that Christmas comes only once a year, but you can spark a good idea at any time when something gives your imagination a lift!

For a start, look at the Geon polyvinyl insulated wire on this set of Christmas tree lights. Here's wire that in its translucent brightness rivals the decorative values of the lights themselves. No need to hide the wire, for it does as much as the ornaments to brighten up the whole appearance of the tree.

This insulation has novel qualities, because it is based on Geon resin. It's smooth and pliable, won't kink or knot. It comes in an array of gay Christmas colors and the colors *stay* bright. It will last through many seasons and fire hazard is minimized because Geon insulated wire is flame-resistant.

What Geon resin does for this new-type wire is but one example of how it makes better and more saleable products in almost every field. The family of Geon resins makes handsome, durable flooring, stain-and-scuff-resistant upholstery, raincoats, wonderful new draperies and a long list of other products. And you can be sure that with Geon's amazing qualities and versatility there are more new products on the way!

If Geon's possibilities spark your imagination for improving or developing a product, we'll gladly help you. We supply the raw materials only, but our technicians are at your service in working out ideas. Just write Dept. N-10, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ontario.

"Plastene" decorative wire by Chester Cable Corp., Chester, N. Y. "Superior" Christmas tree lighting set by Abbott Manufacturing Co., Summit, N. J.

B. F. Goodrich Chemical Company

A DIVISION OF THE B.F.GOODRICH COMPANY

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers

Tune in "Suspense!" — CBS Radio Network
Thursdays — CBS Television Tuesdays

DESIGN *for better living!*

• New beauty, convenience, economy has been made possible through the use of plastics and metal and plastic combinations. The modern automobile has demonstrated this great potential. And the broad scope of the varied applications is being repeated again and again throughout industry.

Here under one roof at Auto-Lite's great Bay Manufacturing Division in Bay City are the technical skills and production capacity for a new art rendered in plastics. The artistic skill of Auto-Lite's Art and Style Division is available on matters of design and development.

THE ELECTRIC AUTO-LITE COMPANY
Bay Manufacturing Division
723 New Center Bldg., Detroit 2, Michigan • Bay City, Michigan

Auto-Lite
plastics and metals

AUTO-LITE MEANS PRECISION MANUFACTURING

EDITORIAL STAFF
Editor-in-Chief: CHARLES A. BRESKIN
Editor: HIRAM MCCANN
Technical Editor: DR. GORDON M. KLINE
Engineering Editor: FRED B. STANLEY
Senior Editor: R. L. VAN BOSKIRK
Managing Editor: A. PAUL PECK
Art Director: DONALD R. RUTHER
Midwestern Editor: VAL WRIGHT
Associate Editor: VIRGINIA SUE WILSON
Associate Editor: WARREN H. GOODMAN
Assistant Editor: THEODORE B. BRESKIN
Assistant Editor: LINDA T. LEFLER
Readers Service: EMMA TURAK

BUSINESS STAFF
Publisher: CHARLES A. BRESKIN
General Manager: ALAN S. COLE

P. H. Backstrom — R. C. Beggs
M. A. Olsen — B. W. Gussow
J. M. Connors — W. F. Kennedy
S. W. Jones, Jr.

Promotion Manager: PHILIP W. MULLER
Production Manager: DANIEL M. BROADS
Asst. Production Manager: B. J. FARINA

Executive and Editorial Offices:
122 E. 42nd St., New York 17, N. Y.
Tel., MUrray Hill 3-0655

Circulation Department
Circulation Manager: FREDERICK A. KLEIN
32 Broadway, New York 4, N. Y.
Tel., WHitehall 4-4782

Branch Offices
Chicago 1: 221 N. La Salle St.
J. M. Connors
Tel., Financial 6-3450

Cleveland 14: 815 Superior Ave.
R. C. Beggs
Tel., Superior 0737

Los Angeles 13: 816 West Fifth St.
James C. Galloway
Tel., Mutual 8335

London, England: Transatlantic Publicity, Ltd., 20/21 Broad Street Ave., Bromfield St., London E.C.2
Manager: L. H. Dolaro

MODERN PLASTICS is fully protected by copyright and nothing that appears in it may be reprinted wholly or in part, without special permission.

Member Audit Bureau of Circulation
MODERN PLASTICS is regularly indexed in Industrial Arts Index and Industex.

EDITORIAL

Moral in a plastic bottle

Over 23,000,000 polyethylene squeeze bottles have been produced in the past two years. More than 100 products are currently using this package, according to *Modern Packaging* magazine.

The cost of these bottles in quantity is at present about two and a half times the cost of glass bottles of comparable size. Of course, as greater volume is used, this price will come down. But even with the present cost differentials, more products are added to the squeeze bottle list every day. One company has been blow molding the bottles since they were first developed; another company has just come into production with the same method; two or three firms are producing some polyethylene bottles by injection molding.

When a relatively costly plastic, first produced commercially only six years ago, can move into the markets and take sizeable chunks of business away from glass — the cheapest material ever made by man — the situation merits more than passing notice.

The reason is obviously in the superior functions of the plastic. The polyethylene bottle is unbreakable, inert, tasteless, odorless, and non-toxic. It can handle caustic chemicals and problem acids in its stride. It has a pleasant "feel." It is so attractive and so durable that some companies using it as a package make savings by omitting the customary cardboard carton.

Coupled with these qualities is the use of plastic valve-type caps which permit spray application of a specific quantity of the contents and prevent over-serving and drip. Thus the consumer saves through the elimination of waste.

Foods, coatings, waxes, solvents, insecticides, are some of the products following drugs, chemicals, and cosmetic items into polyethylene bottles.

The moral: Cost of anything is relative to function. When originality and ingenuity enter into any industrial competition, as is always the case with the development of new products, the dollar sign is no longer a positive factor; cost becomes a relative matter. The almighty consumer always wants more for her money; she wants better and better merchandise and is willing to pay a reasonably higher price for improved function. Because the consumer is of this mind, there are constantly widening opportunities for new ideas and new materials which may cost more but will do the job better.

The part played by plastics in this industrial competition is well illustrated by the amazing growth in acceptance of the polyethylene squeeze bottle. A new approach to function based on a new material is building business in the face of competition from the lowest cost brackets.

INSUROK
by RICHARDSON

Dependable names in plastics

UNDIVIDED RESPONSIBILITY

Many users of plastics enjoy Richardson's VARIETY of products and services. They like the convenience of handing all of their plastics problems to one organization. More important, they like for Richardson to assume complete responsibility for their plastics requirements.

Such an arrangement is possible with Richardson because here, from one company, you can get (1) Laminated INSUROK in a wide variety of grades suitable for virtually every plastic laminate requirement (2) complete punching facilities (3) complete fabricating facilities (4) complete molding facilities (5) experienced engineering (6) complete laboratory facilities if your job calls for laboratory research (7) mold and die design and facilities to produce molds and dies and (8) conscientious, personal attention to your particular needs.

Why not see what this variety of products and services can do for you? Send a set of specifications today and learn, without obligation, how Richardson would approach your job . . . find out for yourself how Richardson's "undivided responsibility" can work to your advantage.

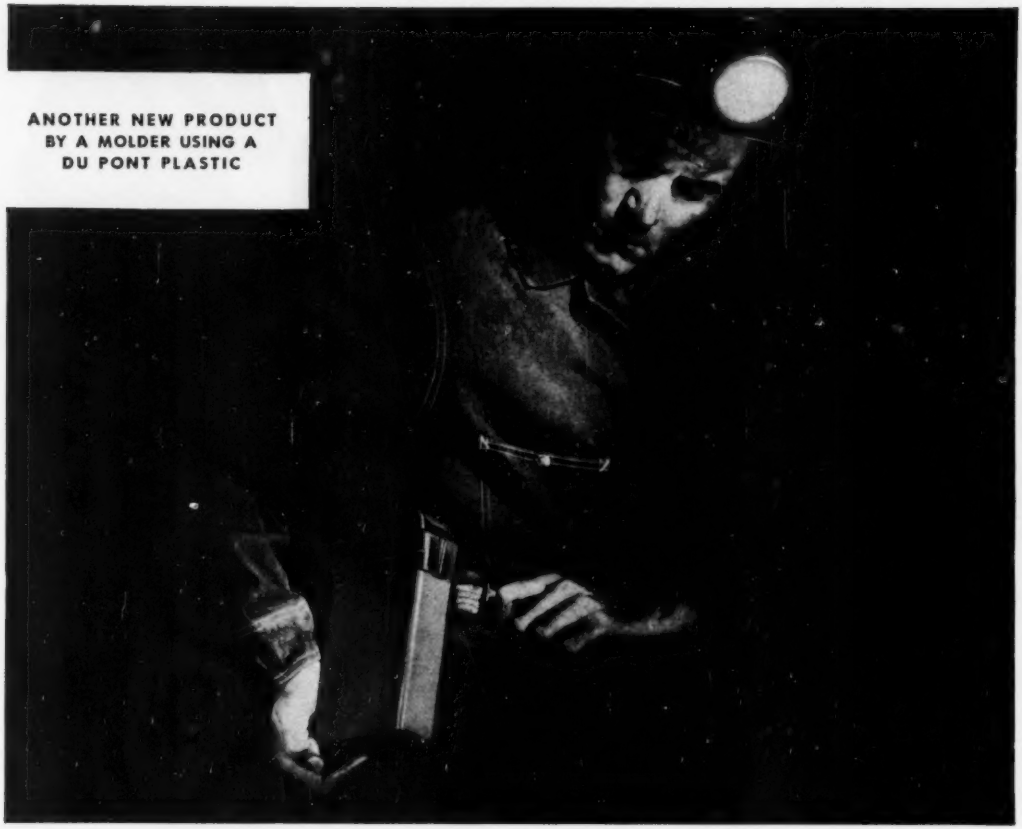
INSUROK is a registered trade-mark of The Richardson Company

The RICHARDSON COMPANY

GENERAL OFFICES: LOCKLAND, OHIO FOUNDED IN 1858

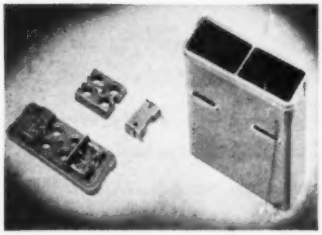
Sales Headquarters: MELROSE PARK, ILLINOIS

CLEVELAND • DETROIT • INDIANAPOLIS • MILWAUKEE • NEW BRUNSWICK, (N. J.) • NEW YORK • PHILADELPHIA • ROCHESTER • ST. LOUIS



NYLON PLASTIC CARRIES 25% MORE LIGHT FOR MINERS

New battery case of molded Du Pont nylon contributes to better vision, greater efficiency and safety



THE INTRICATE DESIGN and precision molding can readily be seen in these nylon parts of the battery case. One of nylon plastic's most practical features is its ability to be molded in various sizes, shapes or thicknesses, retaining high strength and impact resistance. In the assembly, four leak-proof valves for the cells are mounted in a single nylon plastic block. Parts fall in place with hair-line accuracy. Then the case is sealed by the magnetically locked cover.

This battery case for the new EDISON miners' cap lamp contains four cells instead of the conventional three. Yet there's no appreciable increase in size or weight in the battery case over the former 3-cell models. The increased voltage and wattage of the battery permits the use of a bulb that lasts longer and throws off a stronger beam of light.

Nylon was the choice of Thomas A Edison, Incorporated, the designers, because it serves both as insulation between the steel cells of the battery and as an outer case which combines light weight and compactness with resistance to abrasion, impact and corrosive mine waters.

Maybe there's a spot on your production line for nylon's outstanding properties. It's easy to get the facts on nylon and all other Du Pont plastics. Write our most convenient office for literature.

E. I. du Pont de Nemours & Co. (Inc.), Plastics Department, Main Sales Offices: 350 Fifth Ave., New York 1, N. Y.; 7 S. Dearborn St., Chicago 3, Ill.; 845 E. 60th St., Los Angeles 1, Calif.

Nylon parts molded by Vulcanized Rubber and Plastics Co., Morrisville, Pa., for Thomas A. Edison, Incorporated, West Orange, N. J.

DU PONT
REG. U.S. PAT. OFF.
Plastics
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

ARE YOU MAKING *Little Things* COUNT?

Bunny Products, Inc. of Minneapolis are profitably developing a *big* market with their line of colored products in Lustrex for *little* tots, molded on the Reed-Prentice 5A-4 Oz. plastic injection machine.

The Bunny line includes (a) a 2 compartment feeding dish (weight 4 Oz., area 8 x 5") molded at a cycle of 100 shots per hour; (b) a smaller cereal bowl (weight 3 Oz.) produced at the same cycle because of thicker sections around the rim; (c) the cup, made from a deep two cavity mold and (d) the attractive Bunny rattle.

The 5A-4 Oz. Reed-Prentice machine can be the answer to your production problem . . . it is in popular demand by molders who require additional facilities and by manufacturers of products within its range . . . it is extremely versatile and exceptionally low priced. Write Dept. D for full information about the 2, 4, 8, 10, 12, 16, 24, 32 and 60 Oz. capacity machines . . . a complete line for any type of injection molding job.

• SPECIFICATIONS •

Die locking pressure, tons	100
Max. casting area, sq. in.	50
Mold opens	8"
Max. die space	12"
Size: die plates	16 x 21"
Pressure psi on material	16,000

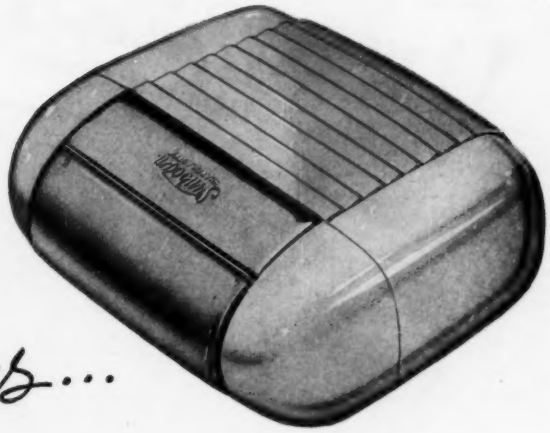
THE WORLD'S LARGEST MANUFACTURERS OF INJECTION MOLDING MACHINES

NEW YORK 6
75 West Street

CLEVELAND 13
1213 W. 3rd Street

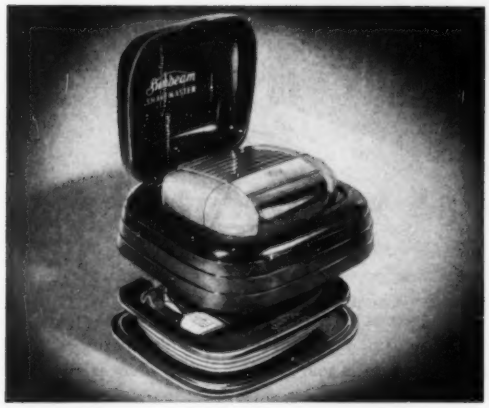
INJECTION MACHINES
REED-PRENTICE CORP.
WORCESTER MASS., U.S.A.

LOS ANGELES 11
2314 Santa Fe Ave.



A new Shape for Shavers...

BUT THE SAME CELANESE* PLASTIC



A NEW KIND OF PACKAGE FOR THE SHAVEMASTER

Combination case and cord holder . . . molded of a Celanese plastic and built for long service life.

3-piece motor housing and 2-piece field coil bobbins molded of Lumarith XF—flame and heat resistant cellulose acetate

When the Sunbeam Shavemaster was given its revolutionary new shape, the manufacturer again specified the same Lumarith* plastic formulation that proved so successful in the former model.

The acceptance of Lumarith for a high quality shaver is proof of the advantages this Celanese plastic can give to electrical parts and products:

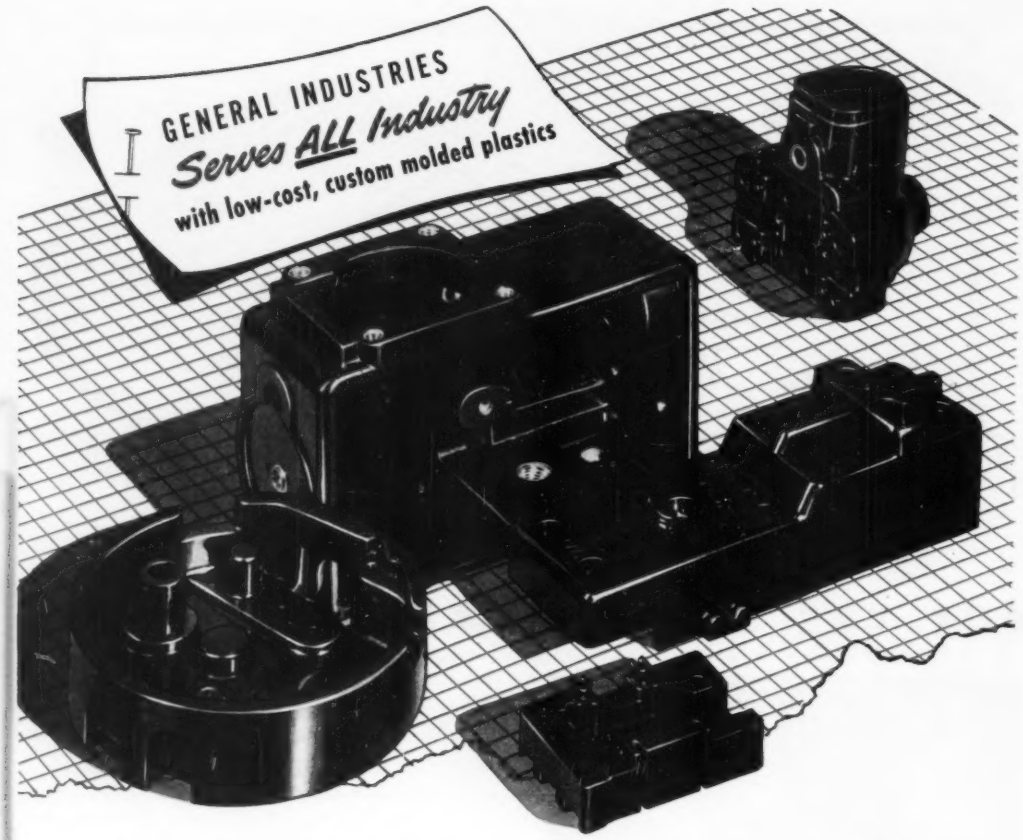
- **shatterproof toughness**
- **flame and heat resistance**
- **form retention**
- **U. L. approval**
- **color range**
- **production speed**

Celanese offers its cooperation in testing and developing this Lumarith formulation for new applications. Celanese Corporation of America, Plastics Division, Dept. 1-J, 180 Madison Avenue, New York 16, N. Y.

Celanese* **PLASTICS**

*Reg. U. S. Pat. Off.

Model W Shavemaster, Sunbeam Corporation. Plastic parts molded by Chicago Molded Products Corp.



precision parts for precise temperatures...

These electric thermostat parts tell an important story about one of America's foremost producers of custom molded plastics—The General Industries Company.

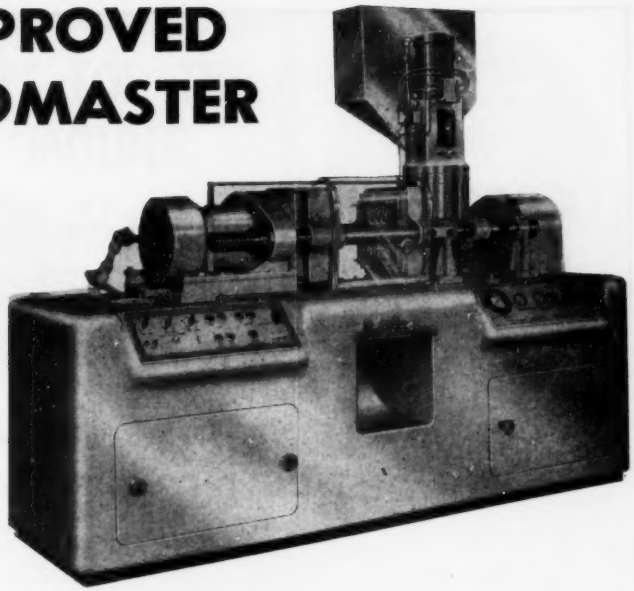
Each is an intricate shape—attesting to molding skill and facilities . . . each contains close-tolerance metal inserts—evidence of the *complete* service provided by General Industries . . . and, equally important, all are used by leading manufacturers—proof of the reputation and reliability of General Industries products.

Whatever the requirements for your molded plastic parts—functional or decorative, or a combination of both—dependable, coordinated engineering and production specialists are ready to work for you at General Industries. Send your blueprints today for a confidential, pre-molding *Cost-check* . . . the only obligation is ours—to save money for you.

The GENERAL INDUSTRIES Co.

DEPARTMENT R • ELYRIA, OHIO

Why the IMPROVED Crown MOLDMASTER



Molds Precision Plastic Parts . . . FASTER and at LOWER COST

The Improved MOLDMASTER provides for the first time an injection molding machine, with large area capacity, capable of producing molded parts with precision dimensional stability; free of warp, stress, or strain. MOLDMASTER users* report cycle efficiency 25% greater than conventional machines, with costs reduced comparatively.

The exclusive and protected** MOLDMASTER Pre-Plasticizing Chamber is the key to this superior performance. The granular material is plasticized *before* reaching the injection chamber. This permits the injection plunger to transmit pressure directly to the nozzle with negligible loss in efficiency, since it operates in a liquid material. The result is precision molding at pressures much lower than conventional machines.

Pre-Plasticizing eliminates all adjustments for metering the charge. An abundant supply of fully plasticized material is available at all times with no waiting or slowing down of the cycle. In actual production runs, the MOLDMASTER completes a full injection stroke in about ½ the time required by conventional machines.

NEW, Trouble-Free Hydraulic Mold Clamping Mechanism eliminates toggles or link pins and the production delays that follow their use. The 32 and 56 ounce MOLDMASTER utilize an exclusive "Hydro-Pressure"** mold clamping mechanism producing positive clamping pressure up to 750 tons without production cycle slow-down.

The MOLDMASTER is easy to install and operate, requires less maintenance than high-pressure machines. It is available in 4, 6, 32, and 56 ounce capacities to efficiently and economically produce your product. *Write for complete details and specifications without obligation.*

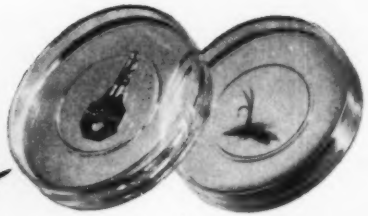
* Production Case Histories on request
** Patent Applied For

Moldmaster
INJECTION MOLDING MACHINE

CROWN MACHINE & TOOL COMPANY
2800 W. LANCASTER **FORT WORTH, TEXAS**

PRESENTING Plastallions

TRADE MARK



THE AMAZING NEW JEWEL-LIKE SETTING FOR DIFFICULT-TO-DISPLAY PRODUCTS

Here's an entirely new way to take products that are usually buried in boxes or drawers and put them out on top of the counter or into the window. How is this magical merchandising accomplished? PLASTALLIONS.

A new process, just perfected, completely encases the solid item in glistening transparent molded plastic, without damage or discoloration. Actually, the item is subtly magnified and glamorized. As a result, it can be picked up, admired and handled ***without being touched.***

Think of the amazing display possibilities PLASTALLIONS give to such items as fish hooks, razor blades, bolts, face powder, penpoints, coal, coffee, and dozens of other hitherto hidden products.

The photo above shows the complete, permanent embedment of a key and a fish hook in PLASTALLION coasters. A trade-mark, emblem or advertising message could readily be embedded at no extra cost with these items.

You have to see PLASTALLIONS, hold them glistening in your hand, to appreciate their magic four-dimensional effect.

Capitalize on PLASTALLIONS, a new and different approach to salesmanship. Mail us a sample of your product, your emblem or logotype, and let us show you how PLASTALLIONS can help you achieve your promotional objective.

Creative PLASTICS CORP.

CHRYSLER BUILDING, 399 LEXINGTON AVE. • NEW YORK 17, N. Y.

Telephone MUrray Hill 3-6215

NEW MARKETS FOR THE INJECTION MOLDER with *BIG H-P-Ms*

This 34 oz. "SHOT" by Standard Products Invades New Field . . . .

Pabst Beer is "lighting the way" to more sales with this attractive sign. It is molded of acrylic with an H-P-M 40 oz. injection machine by Standard Products for Cincinnati Advertising Products Company.

Plastic signs are not new . . . but molding them in such large size by the injection process opens up a large potential market for the plastics molder.

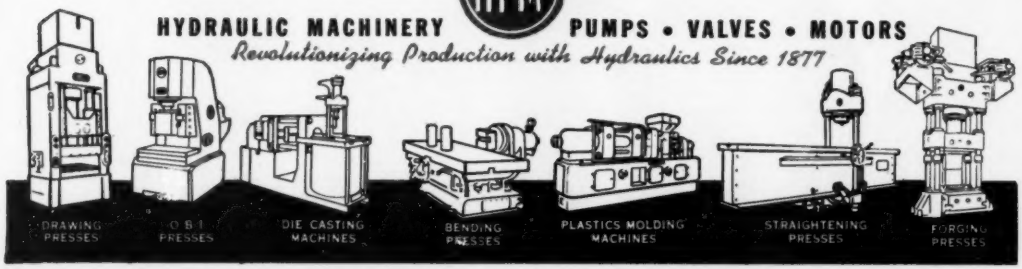
Are you equipped to cash in on BIG plastic parts? Nine H-P-Ms at Standard Products—five over 36 oz. capacity—are doing a real job for this molder! H-P-Ms popular all-hydraulic control means less down time . . . faster cycle . . . quicker mold set-up . . . longer mold life . . . a top quality molded part at the lowest possible cost! Write for Bulletin 4802.

THE HYDRAULIC PRESS MFG. COMPANY
1010 Marion Road Mount Gilead, Ohio, U.S.A.

HPM

HYDRAULIC MACHINERY PUMPS • VALVES • MOTORS

Revolutionizing Production with Hydraulics Since 1877



SHOOT *LARGER MOLDINGS*
NEW WATSON-STILLMAN 48 oz.

Another FIRST, bears the *WATSON-STILLMAN* trade-mark. It's the *NEW* Model 48E-1000 W-S Injection Molding Machine—largest standard type available . . . anywhere.

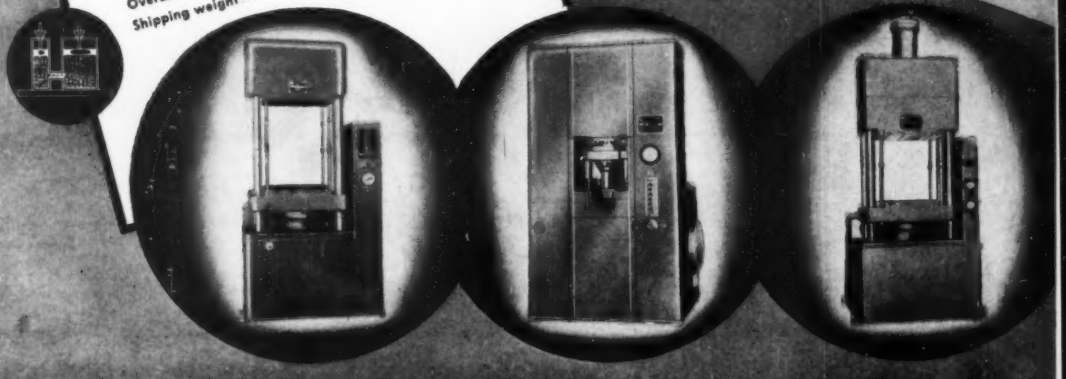
This latest advance in plastics machinery engineering will increase *YOUR* profits . . . give *YOU* a better competitive position, because it materially extends the size-range of products which can be molded in one piece by this process. Model 48E-1000 not only provides greater capacity over previous standards but permits production of items ordinarily produced in smaller machines at reduced cycles. This machine cuts labor costs, saves space, time and operating expense.

Incorporating the major features of the standard W-S "COMPLETELINE," this new unit includes many additional features engineered to assure a more efficient, profitable molding operation. To mention a few—its normal capacity (48 oz.) is increased 40-50% by an automatic stuffing arrangement. It utilizes a giant version of the W-S Heating Cylinder, known for its unusual record of near-capacity shots in such de-rating materials as styrene. The stainless steel hopper receives an entire barrel of material, which can be plasticized on automatic cycle at the rate of 200 lbs. per hour. Why say more?

Orders for 18 of these machines have already been placed. Let us tell you why leaders in the industry are rapidly adopting Model 48E-1000. A glance at the specifications gives one answer. However, write for Bulletin 620-F (with inserts) today, or, get in touch with our nearest representative for full details.

SPECIFICATIONS

Capacity of hopper	200 lbs.
Maximum feed	165 cu. in.
Maximum ounces per shot	48
Plasticizing capacity of cylinder per hour	200 lbs.
Speeds:	
Die Closing (Forward)	420 in. per min.
Die Closing (Return)	385 in. per min.
Injection (Forward)	160 in. per min.
Injection (Return)	210 in. per min.
Injection pressure	21,000 lbs. per sq. in.
Clamping capacity	1000 tons
Stroke of clamping ram	32"
Daylight opening	54"
Minimum die thickness	12"
Maximum die sizes	30" x 50"
Rated maximum power consumption of heat units	13 K.W.
Motor H.P.	60
Oil reservoir capacity	300 gals.
Floor space required	24'-6" x 4'-6"
Overall height	9'
Shipping weight	85,000 lbs.

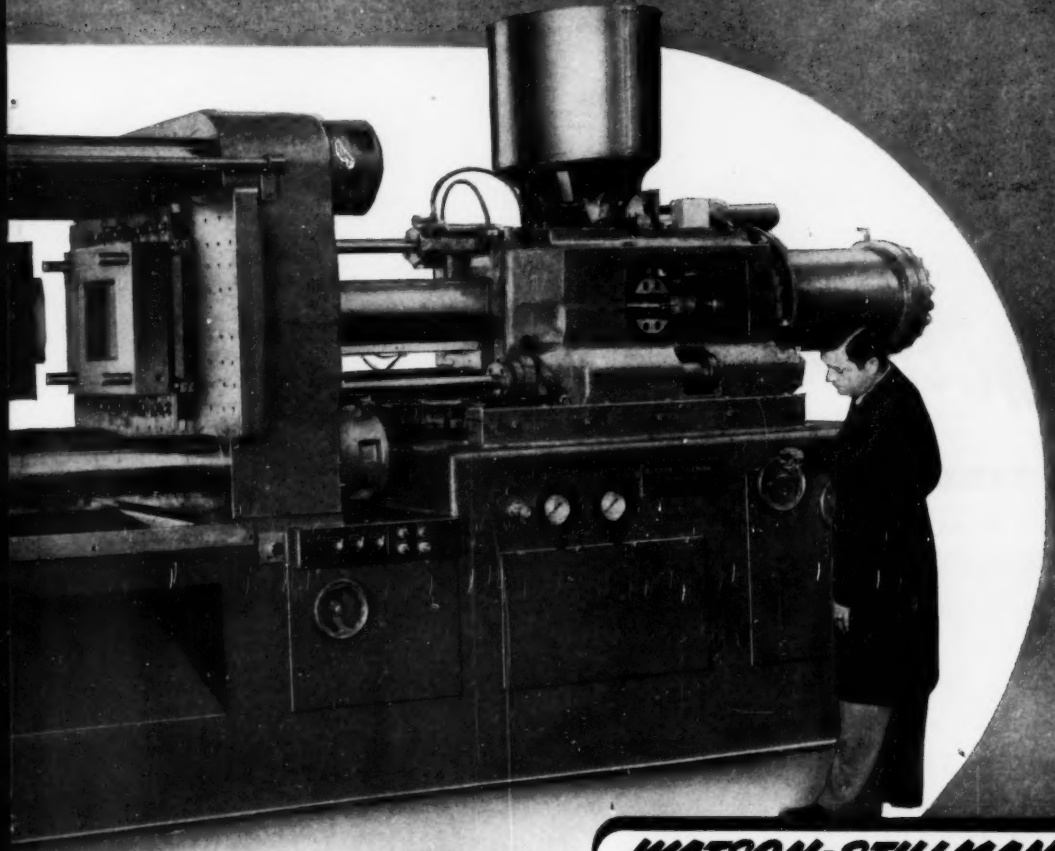


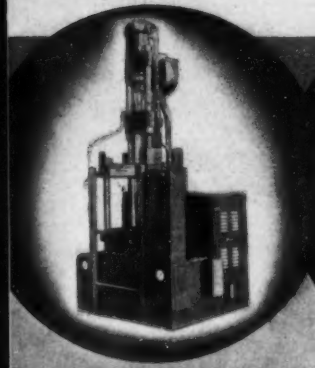
COMPRESSION MOLDING PRESSES
30 TO 1200 TONS

PREFORM TABLETING MACHINES
—30 AND 100 TONS

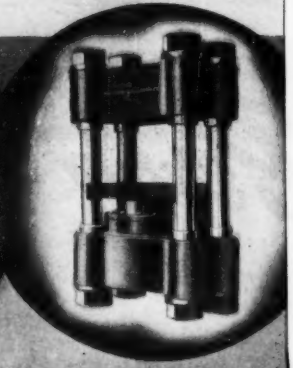
TRANSFER MOLDING MACHINES
30 TO 1200 TONS

for BIGGER PROFITS with the INJECTION MOLDING MACHINE!





VERTICAL INJECTION MOLDING MACHINES—1, 2, AND 4 OUNCES



HOBBING PRESSES 200-3000 TONS

WATSON-STILLMAN

HYDRAULIC MACHINERY DIVISION

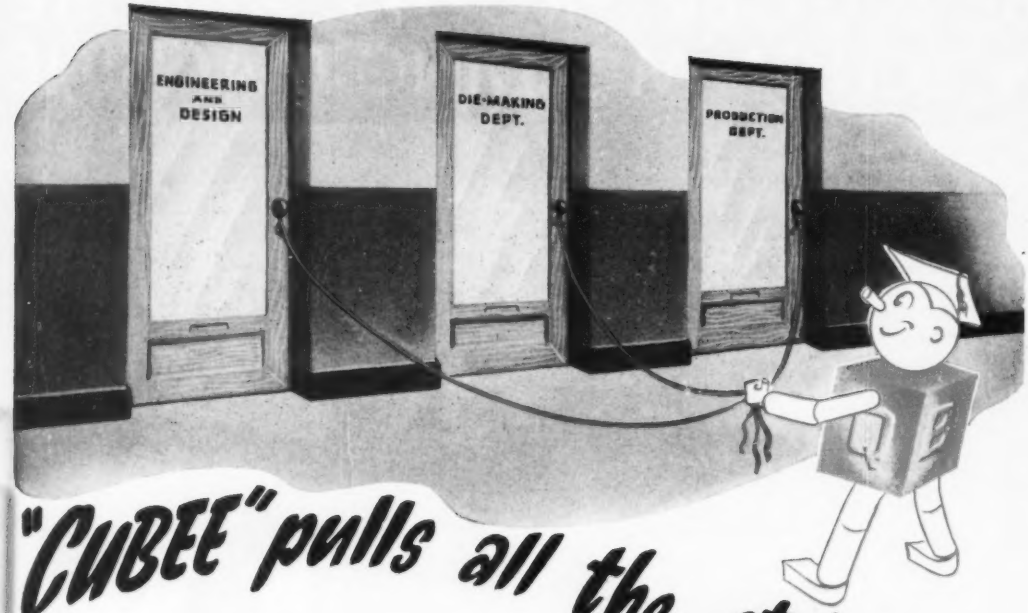
Established 1848

Factory and Main Office: Roselle, New Jersey
Branch Office: Chicago, Ill.

REPRESENTATIVES

Birmingham 3, Ala.	George M. Meriwether
Dallas, Tex.	Perry Machinery Co.
Denver, Colo.	Overgard Machine Tool Co.
Detroit, Mich.	Watson-Stillman Co.
Duluth, Minn.	Anderson Machine Tool Co.
Houston, Tex.	Perry Machinery Co.
Indianapolis, Ind.	W. K. Millholland Machinery Co.
Los Angeles 11, Cal.	H. M. Royal, Inc.
Pittsburgh, Pa.	Stanley Berg & Co.
Portland, Ore.	Machinery & Tool Supply Co.
Rochester 8, N. Y.	Watson-Stillman Co.
San Francisco, Cal.	Schellenbach Mach. Tool Co.
St. Paul, Minn.	Anderson Machine Tool Co.
Seattle, Wash.	Machinery & Tool Supply Co.
Spokane, Wash.	Machinery & Tool Supply Co.
Tulsa, Okla.	Perry Machinery Co.

Foreign Sales Representatives: OMNI PRODUCTS CORP.,
460 Fourth Ave., New York 16, N. Y.
Correspondents Throughout the World
Manufacturers of the most complete line of Hydraulic Machinery



"CUBEE" pulls all the strings...

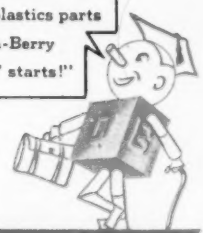
HE TAKES COMPLETE CONTROL

Doesn't it always simplify matters when you can "dump" a problem into someone's lap and forget it? That's why "Cubee" has a big lap. He takes complete control. All the facilities needed to supply you with molded plastics parts are under one roof . . . *our* roof. We design the molds—we make the molds—we mold the plastics product. Nothing is "farmed-out". The complete responsibility is ours. And why shouldn't it be? That's our business—Plastics! The next time you need molded plastics products, call "Cubee". We'll consult with your engineers and designers and come up with the answers to your problems.

Write, wire or phone for further information.

QUINN-BERRY CORP.
26510 West 12th Street
ERIE, PENNSYLVANIA

Q-B Says:
"If you're sweatin' and stewin'
'Cause you need plastics parts
Just call in Quinn-Berry
Then *our* worryin' starts!"



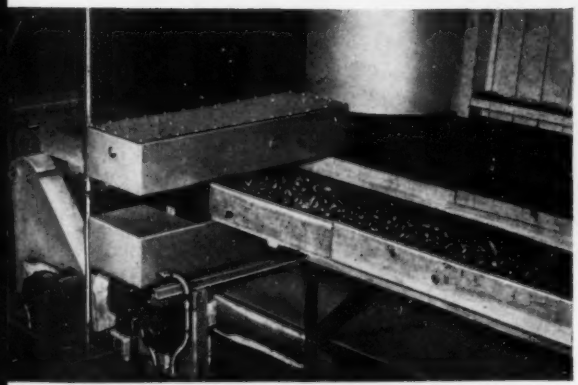
Branch Offices

MR. HARRY R. BRETHEN
11341 Woodward Avenue
Detroit, Michigan
Townsend 8-2577

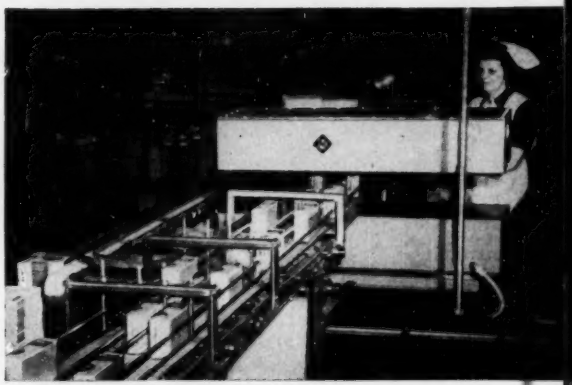
MR. W. A. HURTIENNE
4753 Broadway
Chicago 40, Illinois
Longbeach 0028

MR. RAY T. PEARSON
7906 Provident Street
Philadelphia 19, Pennsylvania
Livingston 9-2103

TRUE STORIES from Files of Four A-C Metal Detector Users

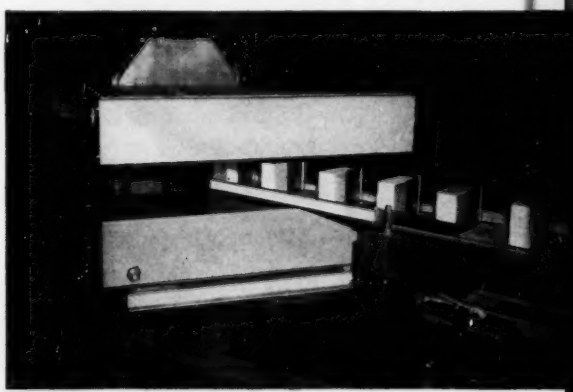


PAID FOR ITSELF — The first month the Electronic Metal Detector was installed in the plant of a cigarette manufacturer, the unit paid for itself by preventing damage to cutter knives. This is typical of prepackaging inspection of fruits, vegetables, and meats to be packed in metal or foil containers.



SAVED THE DAY — Candy maker started up his new Electronic Metal Detector and found it indicated metal in every package. He thought it must be the detector and called a serviceman. Discovered instead that rust scale from overhead pipes had contaminated the entire batch of candy during mixing. Typical candy plant installation shown.

PREVENTS CONTAMINATION — Large flour mill inspects 100-lb. bags of flour in a super sensitive 12 in. aperture type Metal Detector set vertically. Biggest trouble they found is with small pieces of metal from grain processing equipment that gets into the flour. Typical installation of Metal Detectors in vertical position shown.



DETECTS METAL SMALL AS .039 IN. — The consumer is protected by food packagers employing the Electronic Metal Detector, as shown, on packaging and canning lines. Your problem may be as unusual as the manufacturer of meat products who found stray B-B shot from hunters was a problem, and solved it with a Metal Detector.

PREVENT COSTLY SHUTDOWNS WITH ALLIS-CHALMERS ELECTRONIC METAL DETECTOR

MAGNETIC OR NON-MAGNETIC METAL PARTICLES are detected. Pieces as small as .039 inch are spotted no matter how deeply buried. Systems may be arranged so that when metal is detected: 1. conveyor is stopped, 2. automatic rejection device is actuated, or 3. an alarm signals for manual removal of contaminated article. Handles belts to 24" wide at speeds from 15 to 600 fpm. Aperture heights: 2", 4", 7", and 12".

ALLIS-CHALMERS

ALLIS-CHALMERS, 1163A SO. 70 ST. MILWAUKEE, WIS. A-2824

Please send more information about Metal Detectors.

Name.....

Title.....

Company.....

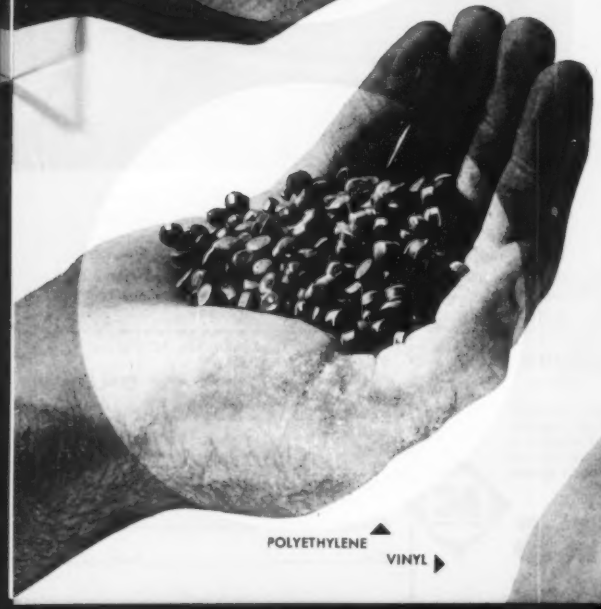
Address.....

City.....State.....

Molding pellets

POLSTYRENE

ACRYLIC



POLYETHYLENE

VINYL

YOU'RE FOREVER FREE of troublesome materials inventory problems when the revolutionary Compounder-Extruder* takes its place in your plant. No longer is it necessary to maintain a large supply of every shade of every plastic you use. No longer need you delay operations until such time as a material supplier runs the color or formulation you want. You merely stock pigments or dyes and low-cost, bulk-purchased uncolored resins.

When your job order schedule calls for a particular color of a specific plastic, you just place the proper colorant and uncolored resin into your Compounder-Extruder together with the required fillers and plasticizers, if any. All ingredients are thoroughly intermixed in a *single pass* by the counter-rotating double worms* in the special "pressurized" compounding cylinder. And as they emerge from the extruding die they're automatically cut into pellets of the proper size and density for perfect injection molding. There's no "overrun." You process only the *exact* amount required for the job at hand.

like these

produced in your own plant in any color at low cost

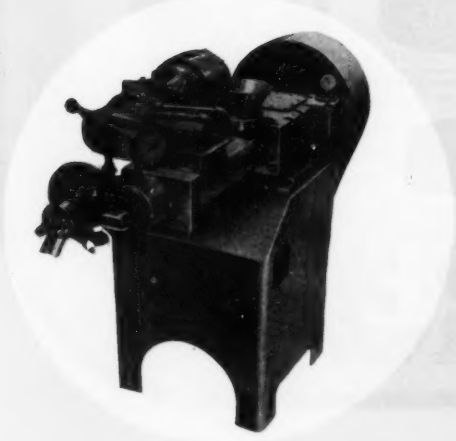
COMPOUNDS AND PELLETIZES ALL THERMOPLASTICS

Your Compounder-Extruder isn't limited to a single material . . . it compounds, colors and pelletizes polystyrene, acetate, vinyl, polyethylene, methacrylate. What's more, the addition of plasticizers and fillers in no manner complicates its operation. And as a matter of fact, you can actually vary the formulation of the material you compound to fit the requirements of whatever product you intend to mold.

COSTS ARE PUSHED WAY DOWN

Using the Compounder-Extruder reduces your molding material costs to an amazing new low. When operated at or near capacity, enough is saved on compounding costs, to enable you to write off the purchase price well within the authorized depreciation period for capital equipment. Savings of additional impressive sums are effected through simplified inventory practices and plant operation procedures.

And the Compounder-Extruder gives you a *practical* method of reclaiming your scrap, too. Reprocessed "straight" or with the addition of virgin resin, it's ready for use again at minimum cost.



SIZES AVAILABLE TO FIT YOUR NEEDS

The Series 2000 Compounder-Extruder (2" double worms) has an average output of 100 pounds per hour. The largest of the five models, the Series 6000, produces fully 1300 to 1500 pounds of colored, compounded and pelletized injection molding feed every sixty minutes. Other models have intermediate production capacities.

SEND FOR DETAILED DATA

The economic significance of the revolutionary Compounder-Extruder is immediately and clearly apparent . . . its ability to reduce materials costs will be favorably reflected in the lower price of the plastics products you mold. Hence, knowing all the facts is vitally important to you. Therefore, please write today, giving full particulars about materials to be processed, output required and the like.

*Patents issued and pending

machinery division

WELDING ENGINEERS INC.

NORRISTOWN, PENNSYLVANIA

ASK STOKES

When you want BIG preforms... WHEN YOU WANT small PREFORMS...

...there is a Stokes Preform Press which is perfect for the purpose.

Stokes Preform Presses have been developed through the years to meet the growing demands of the plastics industry.

Simple rugged design assures long trouble-free service at high production rates. You can adjust for pressure, density, weight, and thickness while presses are in operation.

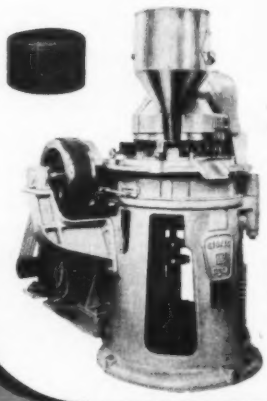
The new Stokes Dual Pressure 294 makes large, heavy preforms up to 4" diameter and 300 grams weight at rates up to 60 per minute. New design produces preforms of uniform density from top to bottom; ideal for preheating and plunger molding. All edges are sharp and firm and free from crumbling. Breakage, damage in handling, and material waste are cut to a minimum.

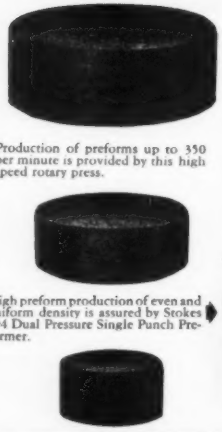
The DDS-2 Rotary is "the old reliable," with years of profitable history in the experience of plastics molders throughout the world. Ball or other standard shaped preforms at rates up to 350 per minute.

These preform presses, shown below, are just two types from the broad range of powerful and economical Stokes presses for every preform need. And Stokes Advisory service meets *all* requirements for information on plastics molding.

F. J. Stokes Machine Company,
5934 Tabor Rd., Phila. 20, Pa.

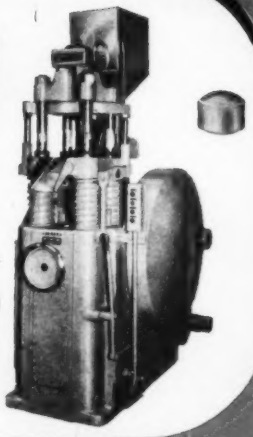
Stokes makes Semi-Automatic and Automatic Molding Presses, Plunger Presses, Closure Presses, Preforming Presses, Industrial Tabletting and Powder Metal Presses, Vacuum and Special Processing equipment, Water Stills and Special Machinery.





Production of preforms up to 350 per minute is provided by this high speed rotary press.

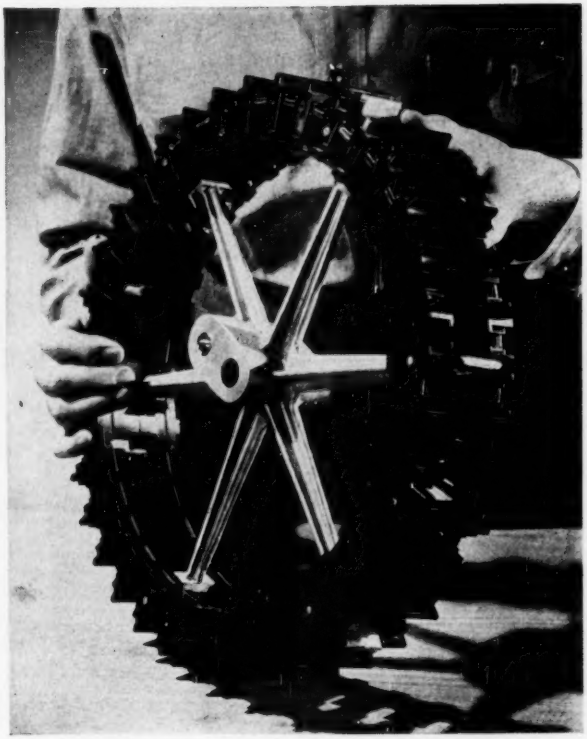
High preform production of even and uniform density is assured by Stokes 294 Dual Pressure Single Punch Preformer.



STOKES KNOWS HOW

$313 savings per machine!

Dispensing rings and shaft bushings molded by Plastic Fabricators, Inc.



BAKELITE Phenolic Plastics provide Better Parts at Lower Cost for Kenro Ice Cream Vending Machines

● A BETTER PRODUCT at a considerably lower cost—that's welcome news at any time, but especially in these days of shrinking profit margins. Here's how the manufacturer of the Kenro ice cream vending machine employed BAKELITE Plastics to pare direct manufacturing costs by $313.12 while improving efficiency:

1. Die cast metal rotary dispenser units were replaced by plastic rings molded from BAKELITE general-purpose Phenolic material. Each ring consists of two sections which are mechanically fastened to form a unit. Four such units are installed in each machine. Direct savings of the plastic assembly over the die cast unit amount to $76 each, making a total saving per machine of $304.

2. Eight shaft bushings, formerly produced from a soft metal at $1.20 each, are now molded from BAKELITE Phenolics at 6¢ each, providing further savings of $9.12 per machine.

3. Weight of the machine was reduced by 30 pounds providing additional savings in shipping costs.

4. Production was speeded by eliminating several machining and finishing operations.

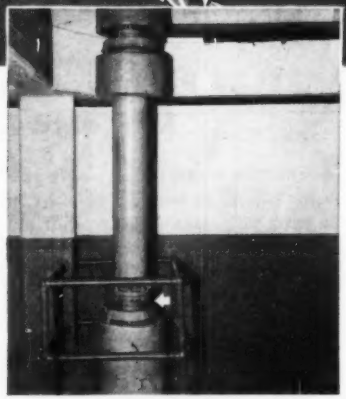
It may pay you, too, to redesign your products or component parts with BAKELITE Plastics. Our representatives will gladly consult with you without obligation, of course. Write Dept. U - 13 today for your copy of our illustrated booklet "Simplified Guide to BAKELITE and VINYLITE Plastics" which describes the many types, forms, advantages and typical applications of these cost-saving materials.

Bakelite TRADE-MARK *Phenolic* PLASTICS

BAKELITE CORPORATION

BAKELITE CORPORATION, *Unit of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

Great mechanical marvels of today use the Barco Flexible Joint for fluid-conveying pipes. Barco has flexibility, provides responsive movement through every angle, absorbs vibration and compensates for expansion and contraction. There is a complete range of Barco designs for transportation and industrial needs. The technical skill of our experienced engineering department is ready to help you with your joint problems. Write Barco Manufacturing Co., 1809 Winnemac Avenue, Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal, Canada.



HOW BARCO KEEPS A STEAM PIPE FLEXIBLE:

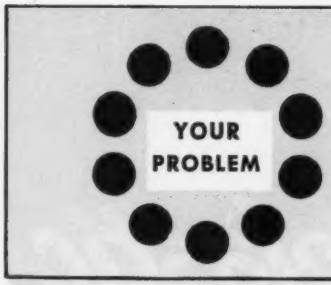
In this Los Angeles office building, the floors are suspended and allowed about 7 inches sway to compensate for earthquake shocks. Barco Joints, because they compensate for expansion and contraction, permit flexibility in the steam pipes of this building.

BARCO FLEXIBLE JOINTS

Not just a swivel joint ...but a combination of a swivel and ball joint with rotary motion and responsive movement through every angle.

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

"MOVE IN EVERY DIRECTION"



The Monsanto Plastics Technical Council—ten men, each a plastics specialist in his own field. Their combined knowledge and experience blanket plastics and dozens of other industries. They offer you *ten approaches* to any given problem.

why not use TEN approaches to ONE problem?

The other day, one of our friends tossed us a problem he had in materials.

"Can you suggest," he asked, "a plastic for a graduated scale on an instrument used in biological laboratories? It must have exceptional dimensional stability . . . good transparency . . . withstand occasional water temperatures up to 190° F . . . and be resistant to phosphoric acid, glycerine, and weak alcohol."

We passed his question on to Monsanto's unique board of ten plastics experts . . . The Monsanto Plastics Technical Council . . . a group of engineers with years of individual experience and specialized knowledge covering the many phases of the complex plastics industry (and several dozen other industries, too).

They came right up with the answer. "Yes, Monsanto produces a plastic that will fit your requirements. It's Lustrex . . . Monsanto's polystyrene . . . which has the following properties of interest to you . . ." And so on.

Then there was a letter from a v. p., wanting to substitute a laminated plastic beam for the wooden timber now used to carry the pick-up shoe on subway cars. He told us the beam must withstand extremes of temperatures, and rapid temperature *changes*, plus good weatherability under rain, sleet and ice conditions.

Again, the Technical Council quickly diagnosed the problem; advised the v. p. that a phenolic laminate (made with Monsanto's Resinox, of course) could fill the bill; and put him in touch with the leading laminators who could do the job for him.

Sometimes plastics might not be the answer to the problem. But chances are we can put you on the track of the *right* material for your job. For Monsanto has the broadest line of plastics in the world . . . its Technical Council of ten experts and specialists a range of experience that blankets the plastics field.

Whatever your product or industry, why not put ten expert approaches to work on your materials questions today? Pose the Technical Council any plastics problem you have, simple or complex. Let it examine any ideas you have in mind—*before* you begin costly production.

There's no cost, no obligation. The Council is just another Monsanto service to the plastics industry.

Lustrex, Resinox: Reg. U. S. Pat. Off.

Monsanto Invites You to send in your questions . . . problems in materials, methods, techniques, costs, or styling. We'll be glad to help you solve them! You may also want our free booklet, "Ten Heads Are Better Than One," describing the Technical Council and how it operates. The coupon is for your convenience.

THE LARGEST FAMILY OF PLASTICS IN THE WORLD

SERVING INDUSTRY . . . WHICH SERVES MANKIND

MONSANTO
CHEMICALS—PLASTICS

MONSANTO CHEMICAL COMPANY, Plastics Division, Dept. MPLP 22
Springfield 2, Mass.

*Please send me information on plastics for*_____

☐ *Please send me the booklet "Ten Heads Are Better Than One" about the Monsanto Plastics Technical Council.*

Name _____ Title _____

Firm _____

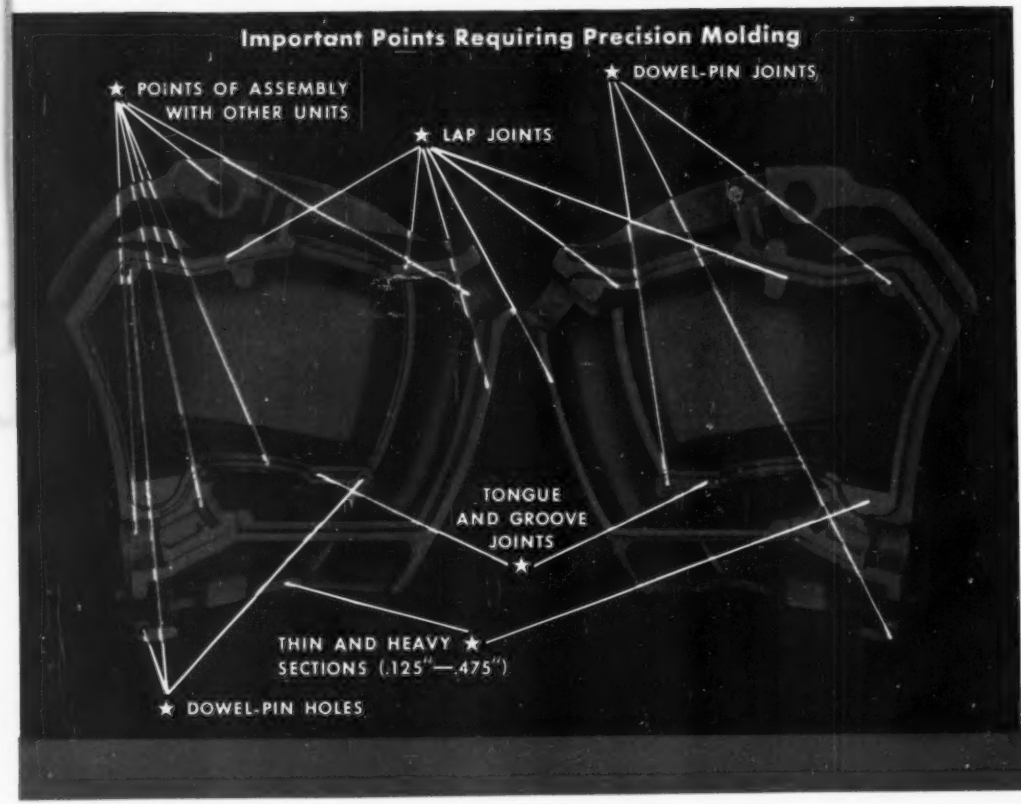
Address _____

City _____ Zone _____ State _____

NEW PROCTOR STEAM IRON

is tops in plastic

Below are pictured the two halves of the water reservoir for the New Proctor Steam Iron showing the details of its outstanding plastic engineering design.
Product designed by Proctor Electric Company's Engineering Staff, Philadelphia, Pa. in conjunction with Donald E. Dailey, Industrial Designer.
Mold designed by Proctor Electric Company's Engineering Staff in conjunction with Shaw Insulator Co., Irvington, N. J., molders of the parts.


Important Points Requiring Precision Molding
★ POINTS OF ASSEMBLY WITH OTHER UNITS
★ LAP JOINTS
★ DOWEL-PIN JOINTS
TONGUE AND GROOVE JOINTS ★
THIN AND HEAVY SECTIONS (.125"—.475") ★
★ DOWEL-PIN HOLES

engineering!

Intricate design perfectly molded using **Koppers Polystyrene 8**

THE water reservoir for the new Proctor Steam Iron is an unusually skillful accomplishment in plastic engineering. It shows the ingenuity of the designer, the skill of the mold maker and the application of a superior polystyrene.

This application required not one or two, but *eight* special properties—

1. Excellent moldability
2. Ease of flow
3. Low shrinkage
4. Dimensional stability
5. Resistance to heat distortion
6. Light weight
7. Low water absorption
8. Transluscence combined with color

Koppers Polystyrene 8 meets all the requirements with the added advantage of low cost.

The water reservoir is made in three parts —the two shown on the left plus a molded cover. Sections vary in thickness from 0.125" to 0.475". Precision molding makes possible the assembly of close fitting valve parts. Mold design, molding technique and the superior properties of Polystyrene 8 combine to assure accurate fit of tongue and groove joints, lap joints and dowel pin joints. (See illustration.) Parts can be quickly assembled and are cemented together with a specially-developed Polystyrene adhesive.

What is your problem in plastics?

The above example shows how one of the Koppers Plastics filled the exacting requirements of one manufacturer. Our technical service representatives have worked on many such problems and their experience is at your call.

KOPPERS COMPANY, INC.
Chemical Division · Pittsburgh 19, Pa.
Regional Offices: New York, Boston, Chicago and San Francisco

KOPPERS

Koppers Company, Inc.
Chemical Division, Dept. MP-10
Pittsburgh 19, Pa.

Please send me data on Koppers Perfected Plastics.

Name.....

Position.....

Company.....

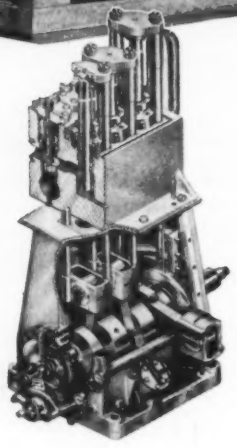
Address.....

Koppers *Perfected* Plastics

· POLYSTYRENE · CELLULOSE ACETATE · ETHYL CELLULOSE

STAYING POWER

An all purpose pump—
The Aldrich Inverted Triplex



Mountains . . . there's rugged grandeur in a range of mountains—and staying power!

There's a similar power in the Aldrich range of high pressure pumps. Every industrial or engineering specialist knows that machinery must have *staying power*—the ability to maintain top performance and high efficiency over long periods of time. They know that interruptions are costly, while *staying power* pays. Aldrich Pumps have that *staying power!*

Take a look at the Aldrich design and construction that make rugged service easy. Note the plungers above the crankshaft, which provide for simplified drive—through speed-reducers or by direct coupling to a driver located on the floor. Expensive foundations are eliminated.

Wherever high pressure pumping is required—and Aldrich Pumps are used—the result is lasting service. Write now for complete technical information. Request Data Sheet 66.

Representatives: Birmingham • Bolivar, N. Y. Boston • Chicago • Cincinnati • Cleveland Denver • Detroit • Duluth • Houston Jacksonville • Los Angeles • New York • Omaha Philadelphia • Pittsburgh • Portland, Ore. Richmond, Va. • St. Louis • San Francisco Seattle • Spokane, Wash. • Syracuse • Tulsa

THE ALDRICH PUMP COMPANY

6 GORDON STREET, ALLENTOWN, PENNSYLVANIA

The **FIRST** *Name in Reciprocating Pumps*

FLAME-RESISTANT

LIGHTWEIGHT

ECONOMICAL

VERSATILE

COLORFUL

TOUGH

Housing is molded in two nesting parts. Pin-point gating reduces finishing operations, yields sturdy pieces free from flow marks. Motor, circulating fan and scent-block assembly are held in place by a metal bracket mounted by means of four metal bushings press-fitted into the plastic housing.

(DISTRIBUTED BY Y & Y DEODORIZER CO., PHILADELPHIA, PA.)

Another Design *First*

attained with "Hercules" Flame-Resistant Acetate

First device of its type to be molded with "Hercules" Flame-Resistant Acetate, the IRO Electric Deodorizer also becomes the the first commercially available model to obtain Underwriters' Laboratories approval.

"Hercules" Flame-Resistant Acetate gives the housing of this unique deodorizer its impact strength, its attractive ivory color, as well as the all-important advantage of a truly self-extinguishing material which can be rapidly injection molded.

Housings and similar applications utilizing "Hercules" Flame-Resistant Acetate are bringing added sales appeal to a growing list of electrical appliances. Our technical staff invites inquiries on improving *your* product with a quality Hercules material.

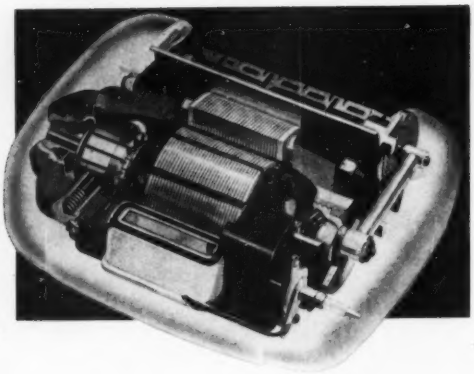
HERCULES POWDER COMPANY

INCORPORATED

916 Market Street, Wilmington 99, Delaware

"HERCULES" IS REG. U. S. PAT. OFF.

CP9-8

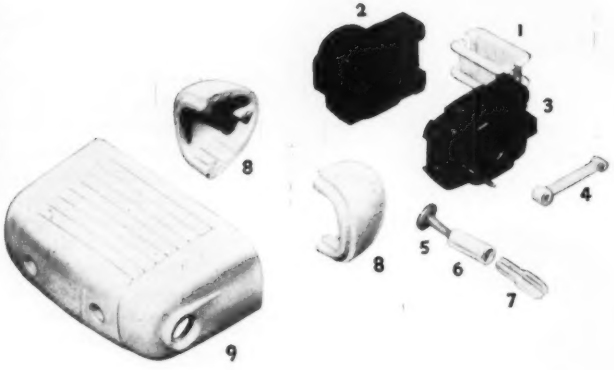


17 MOLDED PLASTICS PARTS
4 DIFFERENT MATERIALS
2 MOLDING METHODS

All

FOR THE NEW SUNBEAM Model W SHAVEMASTER

Case and cord reel molded of Forticel (Cellulose propionate)



1. Two-piece field coil bobbin (Lumarith XF). 2. Motor bearing block — commutator end (Phenolic Bakelite). 3. Motor bearing block — crank end (Phenolic Bakelite). 4. Nylon connecting rod. 5. Nylon insulating sleeve for male connecting plug. 6 and 7. Nylon shell and wedge for female connecting plug on cord. 8 and 9. Housing ends and housing (Lumarith XF).

Not since the introduction of the modern electric shaver has a new model created as widespread and favorable attention as the new Sunbeam Model W Shavemaster. More compact and easier to handle than conventional shavers, the Model W is equipped with a shaving head of twice the usual width, insuring faster, smoother, more comfortable shaving than ever before.

Playing an important part in the Shavemaster's remarkable performance, is a total of 17 plastics parts . . . in 13 distinct applications . . . all produced to Sunbeam's specifications by Chicago Molded Products Corp.

For the case, Forticel provides toughness, moldability, and fine appearance.

The handsome Shavemaster case is molded of richly variegated black (cellulose propionate) was selected to provide toughness plus lustre and beauty. All four parts of the case and reel are injection molded by CMPC.

For the motor housings, flame-resistant acetate insures extra strength, durability, and safety.

A rich grey cellulose acetate is used for the motor housing and end pieces. This material provides the necessary toughness and durability and to meet Underwriters' requirements, a flame-resistant type, Lumarith XF, is used. These parts are injection molded from CMPC tooling.

Phenolic Bakelite for the motor parts provides rigidity, strength, insulation and permanent stability.

The two motor end blocks call for strength, heat resistance, electrical insulation, stability, and rigidity to ries the almost negligible quantity of lubricant needed for years of trouble-free service.

Three other nylon parts are used in the assembly — the insulating sleeve for the male connector plug, and the wedge and shell for the female part.

One Source of Supply for All 17 Plastic Molded Parts.

To produce all of these 17 plastic molded parts, Sunbeam chose Chicago Molded Products Corporation, knowing that here they would find the experience and the production facilities to employ the best possible plastic for each individual application.

The advantages are obvious. With more than 30 years of experience in plastics, and with internationally recognized facilities for mold making and production, CMPC engineers were able to make their recommenda-

CHICAGO MOLDED PLASTICS

and brown material with gleaming smooth surfaces. It also embodies a convenient reel for the electrical cord, concealed in the base.

After exhaustive tests, Forticel insure accurate, permanent alignment. A cotton flock phenolic (improved impact Bakelite) was used with metal inserts molded in. These parts are produced by Chicago Molded's advanced plunger molding methods.

Field coil windings are insulated from the laminated cores by two-piece bobbins injection molded by CMPC from flame resistant Lumarith XF.

Nylon Connecting Rod Performs Vital Job.

Flying back and forth literally scores of times each second, the tiny connecting rod which transmits mechanical motion from the motor to the blade must be light, strong, and resistant to wear. Only nylon, weighing one-eighth as much as metal combines the necessary strength and toughness. Through the length of the rod there is a tiny, molded-in hole, which car-

tions without bias. Materials were adopted only after thorough test. The correct molding method was available for each job, together with exactly the right size and type of press for maximum efficiency and economy. Responsibility was undivided, and there was never a need for compromise or substitution.

This same complete plastics molding service is available to you.

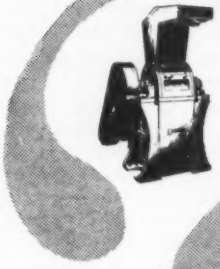
In planning the use of molded plastics, remember . . . there is usually one material and one molding method that will do the job more efficiently and economically than any others. That's why you'll find it good business to discuss plans with a Chicago Molded engineer . . . to enjoy the advantages of broad experience, unlimited facilities and, above all, undivided responsibility and unbiased recommendations. Just write or phone. There's no obligation.

COMPRESSION, INJECTION AND PLUNGER MOLDING OF ALL PLASTIC MATERIALS

CHICAGO MOLDED PRODUCTS CORPORATION

1046 N. Kolmar Ave., Chicago 51, Ill.

Representatives in principal industrial centers



what do you ask yourself about GRINDERS

. . . DICERS and PELLETIZERS?

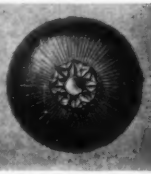
QUESTION: DO I GET A SHEAR, CLEAN CUT WITH MINIMUM POWER CONSUMPTION?

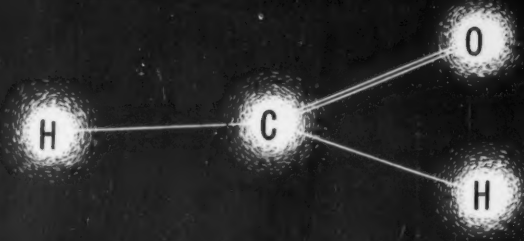
ANSWER: Since 1865 B & J has been producing machine tools. Since 1895 B & J has been making rotary cutters, since 1930 B & J has specialized in cutting problems predominantly in the plastics and allied industries. In the last year B & J has brought out a revolutionary PELLET-DICER with special slitting attachment, containing generations of experience in precision cutting actions.

The type of metal used in cutting knives . . . the tooling of cutting edges . . . the angle and spacing of every knife — all are vitally important to the production of uniform granules and pellets in all types of plastic materials, at a minimum of power consumption. Every B & J machine gives satisfaction when it comes to precision cutting and economical operation. Send for literature and list of distributors.

BALL & JEWELL, INC.

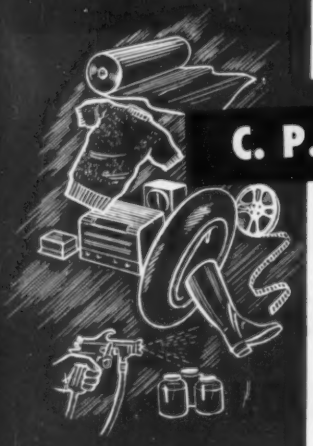
22-28 FRANKLIN ST., BROOKLYN, N. Y.





HEYDEN

FORMALDEHYDE



C. P. Quality in Tank Car Quantities

Purity of raw materials—whether in laboratory or plant—is the surest way to high quality products. Heyden Formaldehyde has for years been recognized as a standard of highest purity and uniformity in the manufacture of many diversified products—urea resins and textile chemicals—protective coatings and embalming fluids. Wherever C.P. quality may make the difference between "excellent" and just "satisfactory," Heyden Formaldehyde is the logical choice.

In tank cars or in bottles, Heyden Formaldehyde is a clear, colorless solution free of impurities which might cause residual foreign odor or discoloration. Produced under rigid laboratory control from C.P. raw materials, it assures uniform yields and high quality. Available as Formaldehyde Solution U.S.P. or as Methanol-free Formaldehyde, it assays not less than 37% by weight.

Shipped in tank cars, tank trucks, drums, carboys and bottles.

FORMALDEHYDE · PARAFORMALDEHYDE
HEXAMETHYLENETETRAMINE

Technical bulletins on the use and handling of Formaldehyde and its derivatives will be mailed promptly upon request on company letterhead.

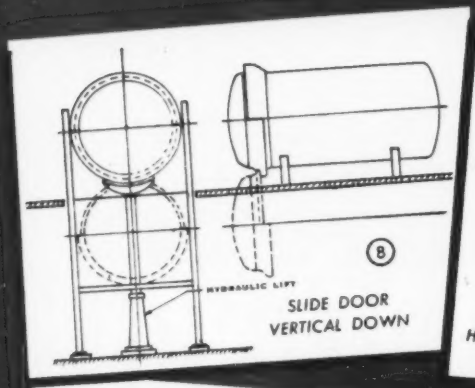
Serving Industry through Finer Chemicals

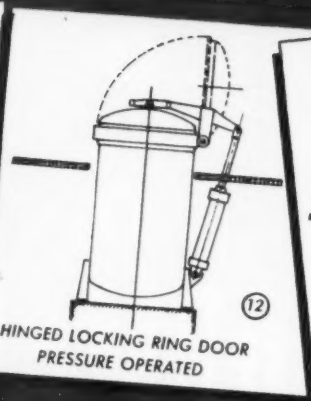
HEYDEN
CHEMICAL CORPORATION
393 SEVENTH AVENUE · NEW YORK 1, N. Y.

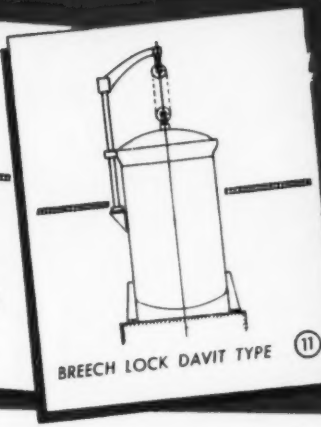
FINE HEYDEN CHEMICALS

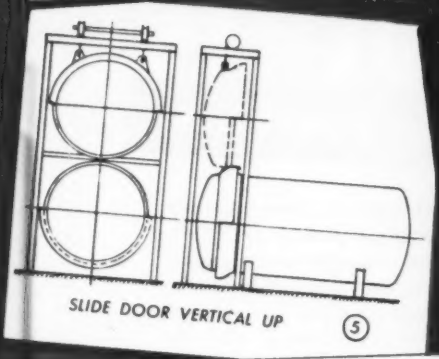
Benzaldehyde · Benzoates · Benzoic Acid · Benzyl Chloride · Bromides
Chlorinated Aromatics · Chlorobenzenes · Creosotes · Formates
Formaldehyde · Formic Acid · Glycerophosphates · Guaiacols
Hexamethylenetetramine · M. D. A. (Methylene Disalicylic Acid)
Paraformaldehyde · Parahydroxybenzoates · Penicillin
Pentaerythritols · Salicylates · Salicylic Acid · Streptomycin

CHICAGO 6: 20 North Wacker Drive • PHILADELPHIA 3: 1700 Walnut St. • SAN FRANCISCO 11: 420 Market St. • RUMFORD DIVISION: Rumford 16, R. I.

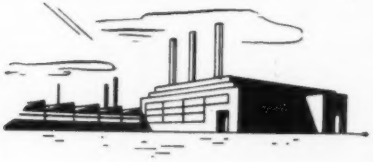


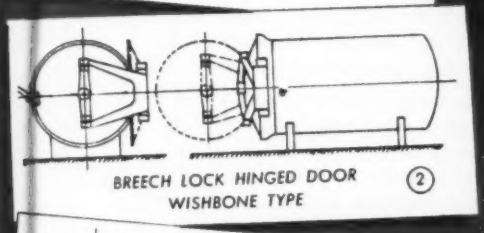


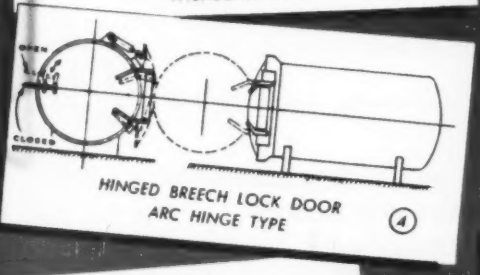


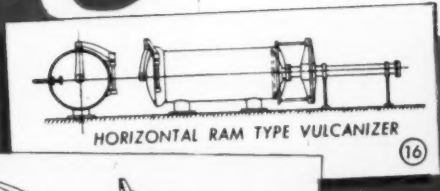


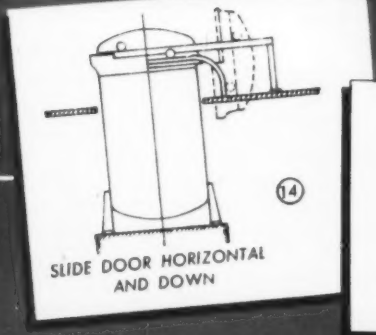
VULCANIZERS and AUTOCLAVES for Every Industrial Purpose...

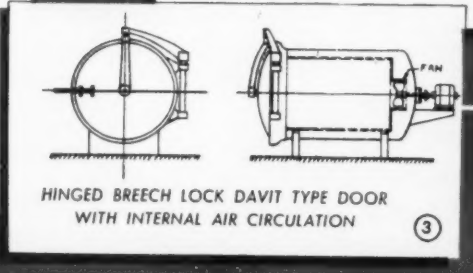




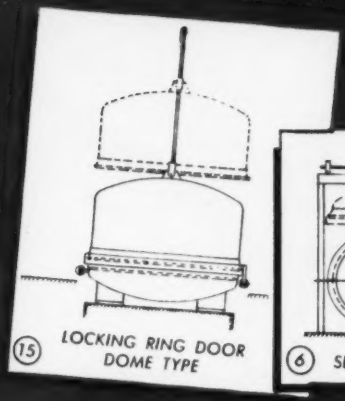


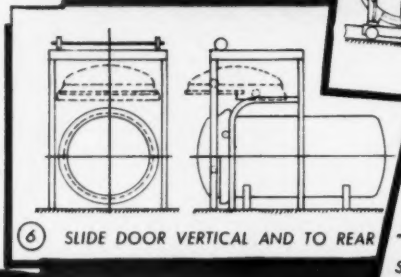


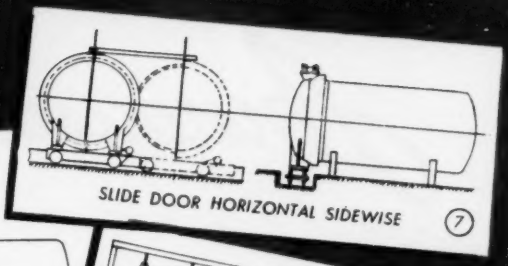


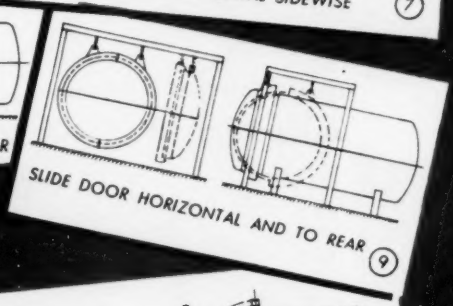


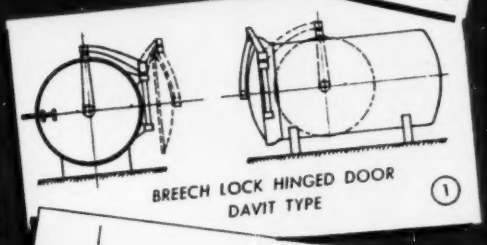
"VULCANIZERS and AUTOCLAVES"
CATALOG No. 461
Write for it today.

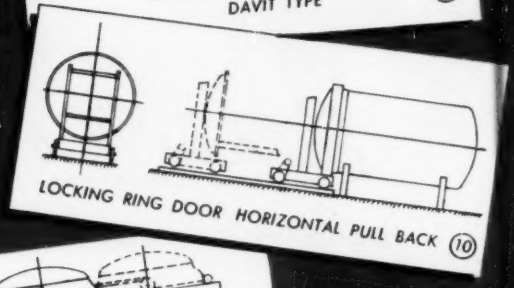


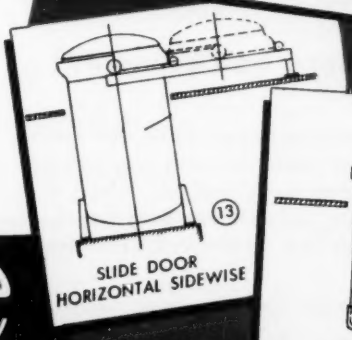


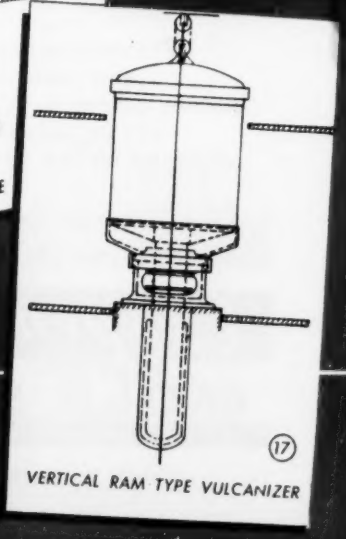












These designs illustrate the many methods employed for opening and closing doors. Several arragements are applicable to automatic cycle operation. Vulcanizers can be made for either horizontal or vertical operation and equipped with hydraulic rams for compressing molds inside. Many vessels are equipped with power-operated circulation fans mounted inside, driven by externally-mounted motors. Vulcanizers have been built to withstand full vacuum or internal pressures up to 1000 pounds per square inch. We have designs and patterns available for almost any diameter up to 15 feet, and for any length.

We will be glad to work with you in applying any of these units to your particular problem.

ADAMSON UNITED COMPANY

AKRON 4, OHIO

SUBSIDIARY OF UNITED ENGINEERING AND FOUNDRY COMPANY

BRANCH OFFICES:

NEW YORK: 441 Lexington Avenue
CHICAGO: 140 South Clark Street
LOS ANGELES: 5140 Crenshaw Blvd.
PARIS: 8 Avenue Percier, Paris 8 eme, France
INDIA: Ajupura, Post Anand, Bombay Province

Announcing

an unusual metallurgical achievement...

...to give you

Entirely New

standards of moldmaking Performance and Economy!

The decision to cash-in on this unusual Mold Steel rests with you. Complete working information is available. Simply drop us a line on your Company letterhead, asking for the new SAMSON EXTRA leaflet.

Export Department: 233 Broadway, New York 7, N. Y. "CARSTEELCO"

THE CARPENTER STEEL CO., 112 W. Bern St., Reading, Pa.

Carpenter GUARANTEED CLEAN DIOK SOUND UNIFORM
ELECTRIC FURNACE
MOLD STEELS
100% ACID DISC-INSPECTED

From Carpenter laboratories comes a new, vastly improved mold steel with a combination of advantages *never before obtainable*:

EXCEPTIONAL HOBABILITY! *Samson Extra* has a maximum Brinell hardness of about 105. Many intricate mold shapes can be hobbed in *one* operation... deeper impressions can be pushed with present equipment... more accurate reproduction of hob design is possible. In a test to determine hobbing qualities, a mold blank 1.75" in dia. by 2.25" lg. was used. A hob measuring .910" in dia. tapered .045" per in. was sunk into the mold blank using a load of 113 tons with one push. *A depth of cavity measuring .71" was obtained!*

HIGH CORE STRENGTH! Mold cavities made from *Samson Extra* have unusually high strength and resistance to sinking. After heat treating from 1550°F., the core will show a hardness of about C-20/25 Rockwell, and a yield strength of 69,000 to 91,000 p.s.i. (depending upon heat treatment)—as compared with 38,000 p.s.i. for a good grade of hobbing iron.

GOOD MACHINABILITY! Even though Carpenter *Samson Extra* is annealed for easiest hobbing, and is therefore soft, it machines very well because of its unique analysis and control in manufacture.

INSURED CLEANNESS! Each step in its manufacture is carefully checked. Like top-quality tool steel, every lot must pass the hot muriatic acid etch before shipment.

UNIFORM RESPONSE TO HEAT TREATMENT! *Samson Extra* is so closely controlled that two shipments a year apart would show no detectable differences in fabrication, heat treatment, or service.

Cabinet molded for Zenith Radio Corp., Chicago

Skillful Molding Creates

ITS NEWEST CABINET MEMBER

This cabinet which we molded for Zenith's new "Tip Top Holiday" portable is the latest in a long line of plastic cabinets molded by Mills. In shape—size—color—these cabinets have varied as widely as the products for which they were made.

All were alike however in one respect. Each was engineered and molded so that its attractive, sales appealing appearance was matched by sturdy durability.

The fact that we received additional cabinet molding jobs as well as other molding orders from the same clients proves we can be depended upon for top quality every time.

Let us show you today how our unique combination of sound engineering—*careful, correct* material selection and skillful molding can create a better plastic product for you.

Write on your letterhead for the new Injection Molded and Extruded Plastics Catalog. Or, for detailed information about [redacted] piping, tubing and fittings, write for circulars containing data and illustrations.*

**Trademark registered*

ELMER E. MILLS CORPORATION

INJECTION MOLDERS and EXTRUDERS of: Tenite, Lumarith, Plastacele, Lucite, Nylon, Ethyl Cellulose, Plexiglas, Polystyrene, Styron, Loalin, Vinylite, Geon, Plexene, Polyethylene, Cerex, Forticel, [redacted]*, Saran, and other Thermoplastic Materials.

2930 NORTH ASHLAND AVENUE • CHICAGO 13, ILLINOIS

▲ NEW ADDRESS

NEW PLANT ▶

Admiral's
new
2-speed phono-radio

Strikes all the right notes

with plastic cabinet
molded by MPc

It takes a whole symphony of values…eye-captivating beauty, ear-pleasing tone, versatile performance, *plus economical price*…to assure commercial success for a new radio-phonograph in today's competitive field. In their new model, Admiral has hit all the right notes…by market-wise design and the use of an **MPc**-molded cabinet.

Observe the ingenious design of the one-piece cabinet base. It houses the radio in the forward section, supports the record-player mechanism, and even provides rigid backing for the Aeroscope antenna at the rear. Side cores provide molded-in openings for control knobs, speaker and dial. Molding ingenuity achieves an attractive swirl finish that enhances the take-me-home look of this instrument.

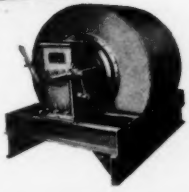
Making plastics perform to your commercial advantage is our business, here at **MPc.** Submit your plastics product or problem to
MOLDED PRODUCTS CORPORATION,
4535 W. Harrison St.,
Chicago 24, Ill.

PLASTICS DIVISION
MOLDED MPc PRODUCTS
CORPORATION

You Can Cut Today's High Production Costs with STURTEVANT EQUIPMENT

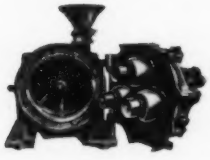
AIR SEPARATOR

For separation of fines to 325 mesh and finer. Increases output from 25% to 300% . . . lowers power costs by 50%. For years, this separator has been the standard in the cement industry.



DUSTLESS BLENDER

Four-way mixing action assures a thoroughly blended product. Open-door accessibility permits easy cleaning. Available in many mixing capacities for ¼ ton per hour and up.

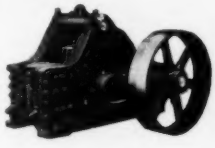


RING-ROLL MILLS

For medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open-door accessibility. Many sizes. No scrapers, plows, pushers, or shields.

SWING-SLEDGE MILLS

For coarse and medium reduction (1" to 20 mesh). Open-door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.



JAW CRUSHERS

For coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.

Sturtevant equipment, such as illustrated, helps you overcome high labor and production costs by increasing output. In addition, their rugged construction assures long life with minimum maintenance. It will pay you to investigate these machines. Write for information.

STURTEVANT MILL COMPANY
110-A CLAYTON STREET, BOSTON 24, MASSACHUSETTS

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

MAIL COUPON TODAY!

STURTEVANT MILL COMPANY
110-A Clayton Street, Boston 24, Mass.

Gentlemen:
Please send me your catalog. I am especially interested in _____

Name _____

Street _____

City & State _____

Meet the twin screw RC-3

It compounds... It colors... It extrudes... It reclaims scrap

Almost "vest pocket in size" — and proportionately low in cost—the RC-3 will produce finished extrusions or injection molding pellets at substantially less than they cost you now!

Check these startling features

EXCLUSIVE "TWIN SCREWS"

Complete plasticization, compounding and coloring is *only* possible with multiple screw construction! The patented *interpenetrating twin screws* of the RC-3 (both rotating in the *same direction*) represent the most efficient compounding and extruding design ever devised.

LOWER OPERATING COST

Here are the facts: Labor costs are almost non-existent —one semi-skilled operator can tend five or more RC-3's. No auxiliary equipment is needed. And power consumption is negligible: a small 5 hp motor in each machine does the job of compounding, coloring and extruding.

LESS PLANT SPACE

The RC-3 occupies less area than a standard card table—it measures only 2' 3" x 3' 7". Completely mobile, weighing only 1870 pounds and so perfectly balanced that it's entirely vibrationless, the RC-3 needs no permanent mounting. It can be moved easily from job to job or repositioned next to other RC-3's for multi-color work of a complexity never achieved by any other extrusion equipment.

HIGHER OUTPUT

Despite its small size, the RC-3 can color and compound polyvinyl chloride up to 72 pounds per hour; color and extrude polystyrene up to 72 pounds per hour. Two-ply vinyl gasoline hosing (inner core soft P.V.C., outer core hard P.V.C.) can be extruded at 88 pounds per hour using two RC-3's and ingenious crosshead dies.

FASTER CHANGEOVER TIME

Actually no changeover time is necessary when shifting from color to color or compound to compound. The RC-3 cleans and flushes itself in a matter of minutes. Whenever complete disassembly is required for upkeep or maintenance purposes, the job of breaking down and re-assembling can be done in not more than fifteen minutes.

TRULY AUTOMATIC

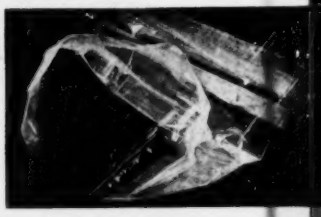
There is an automatic pre-mixer and charging hopper, an automatic overload cut-out, automatic temperature controls for cylinder, die-head and die.

and look what it does!

You have never seen extrusions like these before! They open up entirely new markets for extrusions throughout all industry . . . untapped markets that are wide open to you when you use RC-3 equipment. How come? *Because your purchase of RC-3 extruders brings you as well all the "know-how" of the world's foremost technical experts in the production of crosshead extrusions.*

Your RC-3 machines — now available for *immediate delivery* — are delivered, installed and serviced by trained factory representatives of our organization. And your purchase includes instructions and counsel, *whenever you need it*, on special extrusion work: multi-color and multi-material extruding, special rotating crosshead work, plus detailed instructions on the formulation of special compounds for all types of thermoplastic materials.

1


2

3

4

1. **GASOLINE HOSING.** Protective shell of hard polyvinyl chloride extruded over core of soft polyvinyl chloride. Extruded in one operation. Flexible.

2. **WIDE SHEETS.** For packaging and other applications, a single RC-3 turns out thermoplastic sheeting up to 54" wide. Accuracy within .001".

3. **MULTI-COLOR BELTING.** Separate colors (number of colors depend upon number of machines operating through a single crosshead) in widths up to 54".

4. **PELLETIZED COMPOUNDS.** Compounded, colored and pelletized in one pass. Good uniformity and density. Suitable for injection molding and extrusion.

For detailed information about the RC-3 write to —

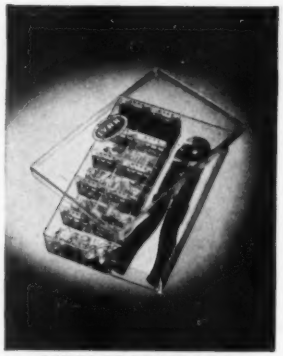
U. S. AGENTS

J-C

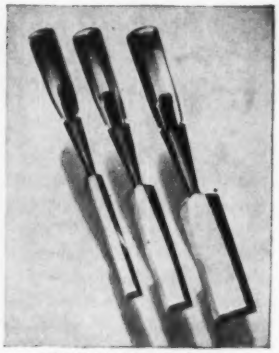
Jackson & Church
COMPANY
SAGINAW MICHIGAN

R. H. Windsor Ltd.
16 Finsbury Sq. London, E.C.2 England
MANUFACTURERS UNDER L.M.P. PATENTS

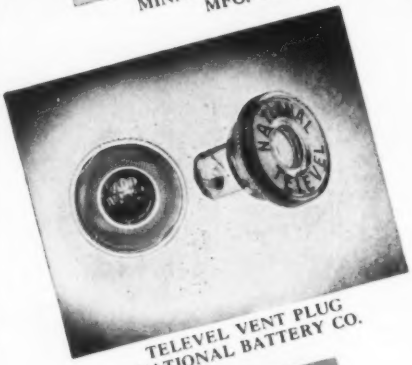
MINNESOTA MINING & MFG. CO.



LYNN PRODUCTS CO.



GREENLEE TOOL CO.
Division of Greenlee Bros. & Co.



TELEVEL VENT PLUG
NATIONAL BATTERY CO.

STOCK BATTERY VENT PLUG

A COMPLETE INJECTION MOLDING SERVICE FOR YOU

Plastic Engineering
Plastic Mold Service
Injection Molding
Finishing
Assembling
Printing
Painting
Packaging

Consult Us About Your Plastic Molding Needs

INJECTION MOLDING
MINCOR
YOUR PLASTICS DEPARTMENT

MINNESOTA PLASTICS CORP.
366 WACOUTA • ST. PAUL 1, MINN.

You get better vinyl extrusions with PLIOVIC A

LIGHT-COLORED, SMOOTH EXTRUSIONS *like this vinyl garden hose are fabricated easily with* **Pliovic.** Inset *shows rapid production of extrusions made possible by this new vinyl chloride-type copolymer.*

YOU can improve production — reduce your requirements for costly plasticizers—cut your processing costs—and do them all without changing the present physical properties of your vinyl extrusions when you use **Pliovic A**—Goodyear's new vinyl chloride-type copolymer.

Pliovic needs from 5% to 10% less plasticizer than comparable copolymers because it has a more efficient internal plasticizing action. You'll find it unusually processable. It can be milled, Banbury-mixed, calendered or extruded at lower temperatures.

Two Types Available

Pliovic A may be used alone or in combination with other vinyl resins — has high strength, excellent resistance to flex-fatigue. It can be compounded to give good age and light stability. It has excellent chemical resistance. Typical uses are in extruded hose and tubing, calendered films and flooring.

Pliovic AO is especially intended for the preparation of high-solids content organosols — can be fused at lower than usual temperatures into high-strength continuous films characterized by unusual clarity, excellent tear strength and strong heat-seals.

For full details and samples, write:

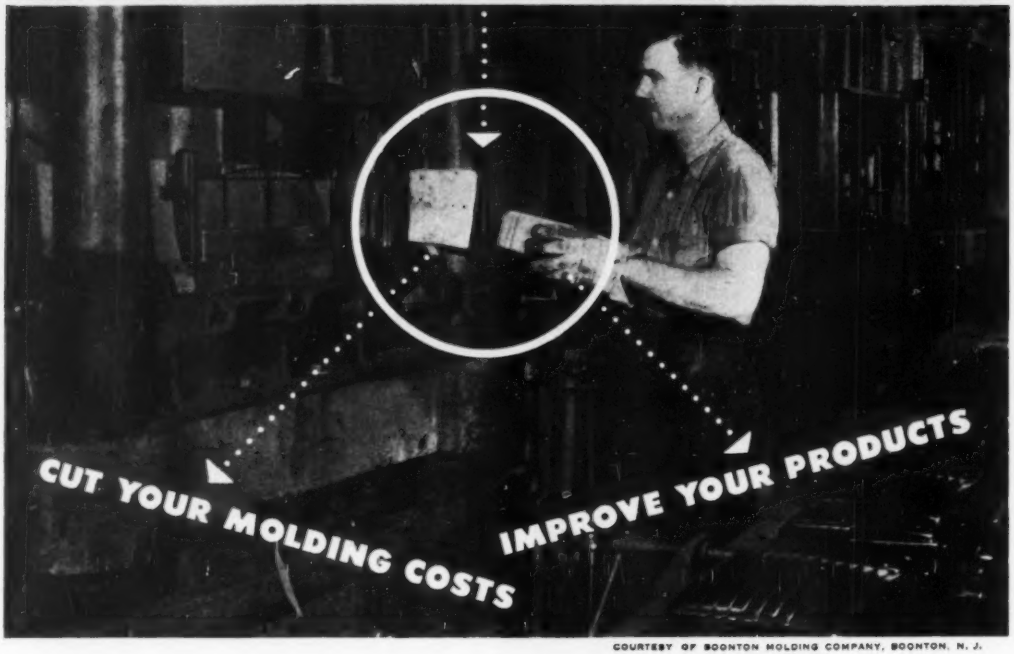
Goodyear, Chemical Division,
Akron 16, Ohio.

USE PROVED *Products*

GOODYEAR

Pliovic—T.M. The Goodyear Tire & Rubber Company

LUBRICANTS and SERVICE that



COURTESY OF BOONTON MOLDING COMPANY, BOONTON, N. J.

Metasap Zinc, Calcium and Barium Stearates speed molding operations, prevent waste. Under heat and pressure, they flow to the surface of the compound and assure

- ... *no sticking during rolling*
- ... *elimination of shutdowns for scraping mills*
- ... *easy flow of the plastics mix*
- ... *quick release from the mold*

(Or, if you wish, you can use these stearates for dusting your molds.)

RESULT: Greater volume, fewer rejects . . . costs cut, profit up. And better products to boot! . . . for these Metasap lubricants

- ... *do not stain molds*
- ... *eliminate blooming*
- ... *promote a superior finish*

And Metasap Stearates are backed by Metasap Technical Service. Our "saturation" coverage of the entire country with an exceptionally well-informed, alert force of representatives assures fast, competent service to each and every customer. *You get what you want when you want it.* And technical problems are referred back immediately to our central laboratory, which gladly provides information resulting from accurate tests, makes recommendations based upon your specific requirements.

For complete information, write

METASAP CHEMICAL COMPANY, Harrison, N. J.

CHICAGO • BOSTON • RICHMOND, CALIF.

CEDARTOWN, GA.

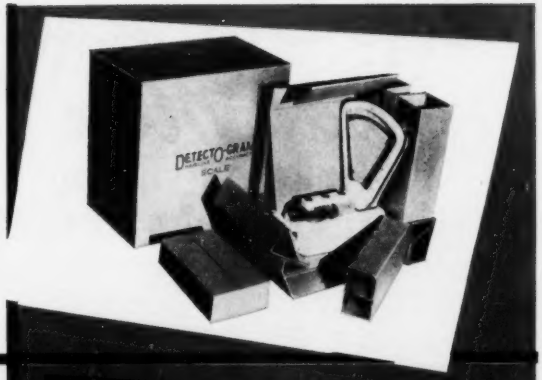
METASAP CHEMICAL COMPANY REG. U.S. PAT. OFF.

Stearates

of Calcium • Aluminum • Lead • Magnesium • Zinc

SHOCK-PROOF SHIPPING BOX

You can't take chances in shipping delicate, precision equipment. If such equipment is damaged in transit, your customer will probably look elsewhere the next time he places an order. Whatever your product, the H & D Package Laboratory can work out a safe, dependable, economical packaging method that will protect your goodwill . . . *and* your profits!



Use the LUGGAGE BOX for Extra Sales Appeal

Promotion of seasonal merchandise is but one of many successful applications of the H & D luggage box. Use it to add extra value to your product, to win extra sales appeal. It makes your product easier to carry, easier to use. Your dealers will endorse it—because it displays well, simplifies the selling job, reduces selling costs, eliminates repacking and wrapping.

PLYPAK*-- *A Packaging Material of a Thousand Uses*

PLYPAK* is a corrugated packing material that combines several thicknesses of corrugated paper to form a protective "blanket" which is ideal for packaging fragile merchandise. Clean and easy to handle, PLYPAK* is simply "wrapped" around a product, gives it a soft, close-fitting cushion that defies shock. Ask for sample.

*REG. U. S. PAT. OFF.

REG. U. S. PAT. OFF.

H&D BOXES

FOR MORE INFORMATION, WRITE

HINDE & DAUCH

Authority on Packaging

FACTORIES IN:

Baltimore 13, Md. • Buffalo 6, N. Y. • Chatham, Ontario
Chicago 32, Illinois • Cleveland 3, Ohio • Detroit 27, Mich. • Gloucester, N. J. • Hoboken, N. J. • Kansas City 19, Kansas • Lincoln, N. C. • Sandusky, Ohio • Richmond 12, Va. • St. Louis 15, Mo. • Sandusky, Ohio • Toronto, Ontario • Waterloo, Iowa.

More Dependable Lamination with More Uniform Fabrics

Mt. Vernon Extra's greater uniformity means more uniform penetration of laminating materials.

Made from carefully selected top grades of cotton, Mt. Vernon Extra fabrics are produced under precise laboratory controls to the close standards of tolerance essential for successful lamination.

For fabrics that assure you consistently reliable performance, specify Mt. Vernon Extra.

uniformity makes the big difference

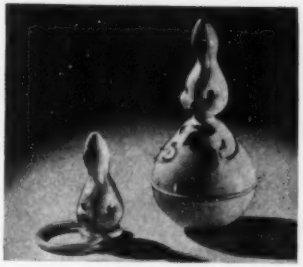
Mt. Vernon-Woodberry Mills

TURNER HALSEY
COMPANY
Selling Agents
40 WORTH ST. • NEW YORK

Branch Offices: CHICAGO • ATLANTA • BALTIMORE • BOSTON • LOS ANGELES • AKRON

Gotham project:

TEETHING RATTLE AND ROLY-POLY



Gotham efficiently assembled these fast selling children's novelties which are made of molded colorful acetate. For the Roly-Poly, the identical base is used in combination with several different heads which are available to create varied effects and to widen the line. All of the operations needed to assemble the units are done rapidly, perfectly, at low cost by Gotham. Spot painting and stencilling give these outstanding toys a fine appearance.

Gotham project:

CANDID MIDGET CAMERA

The camera was re-engineered by Gotham to its present high quality and saleability for low cost premium and retail distribution. Materials were re-specified, method of assembly was improved. Within three weeks a production line was turning out 10,000 cameras daily with rejects at less than 1%. Now Gotham can produce 14,000 cameras every day. Gotham does the entire job—procurement, molding, metal stamping, assembly, inspection, packing, shipment.

Gotham project:

COUNTER DISPLAY

A modern looking sales stimulator is this handsome package holder, fabricated from gleaming, clear Lucite or Plexiglas for use on cigar store counters. Designed by Gotham for quality and low-cost production, it is made by sawing and forming ⅛" sheet and then permanently cementing the sections together. This counter display provides the ideal combination of attention value and display for impulse sale items.

Gotham project:

YOUR NEXT PLASTIC PRODUCT

Gotham has the know-how and the facilities to take over any or every phase of producing your next plastic item. We design, specify materials (plastics, metals, woods, etc.) order molds and dies for metal stamping, fabricate, assemble, drop ship. You get single responsibility plus assurance that your plastic item will be turned out at a cost that will return a profit to you. Submit prints or samples and production requirements for price and time estimates.

All jobs and inquiries handled confidentially.

Gotham *plastics corp.*

110 Sherman Avenue • New York 34, N. Y. • LO 7-7993-4

RE-ENGINEERING
DESIGNING

molding
extruding
fabricating
deep drawing

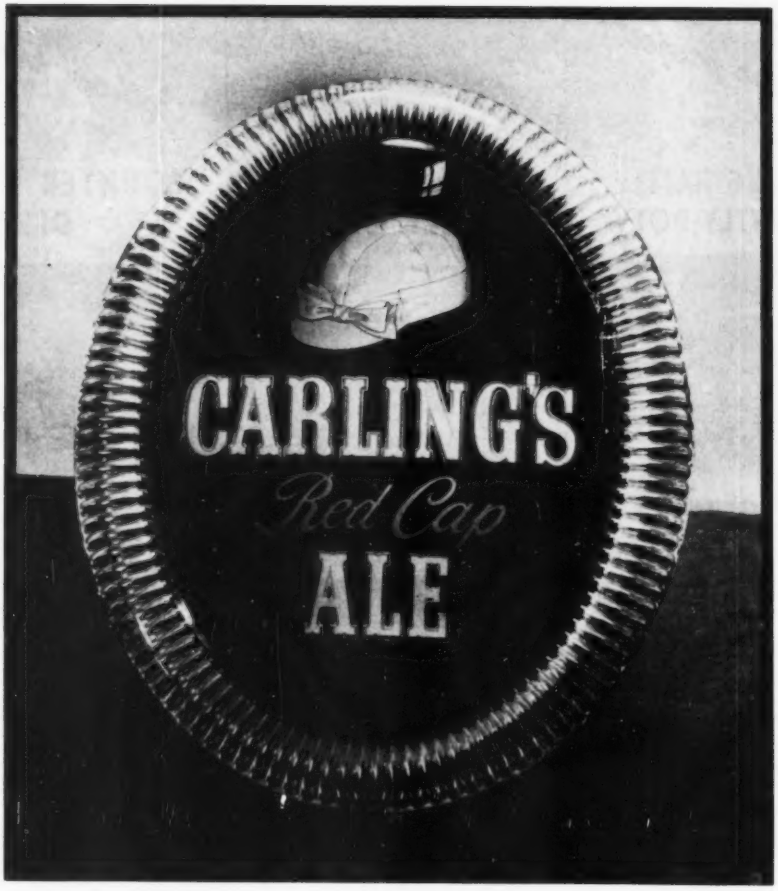
•

assembly
engraving
finishing
die cutting

•

purchasing
inspecting
packing
shipping

Gotham does them all!



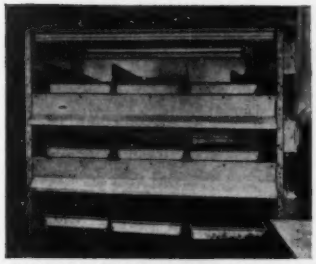
Creative Custom Molding

Illustrated above is a sign produced for Carling's Ale, distributed by The Brewing Corporation of America, Cleveland, Ohio. This injection molded sign measures 12"x9-7/8". It is made of acrylic material and finished in three colors -- red, green, and bright silver.

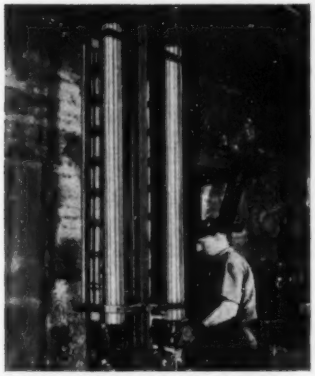
"The customer reports that this sign has been an effective point of sale advertising medium."

CRUVER MFG. CO.
Est. 1896
MOLDING • FABRICATING • LAMINATING • FINISHING
"BAS-RELEEF" • DECORATING • ASSEMBLY • SPRAYING
2460 WEST JACKSON BLVD., CHICAGO 12, ILLINOIS
NEW YORK 3 West 40th Street
DETROIT General Motors Building
ST. LOUIS Cotton Belt Building

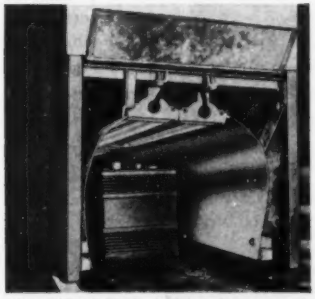
APPLICATION REPORTS from the CHROMALOX FILES



DEHYDRATING. Vari-colored powders for injection molding machines are completely and uniformly dried in 10 to 15 minutes with Chromalox Radiant Heaters.



METAL HEATING. Spherical molds containing compressed kapok are heated to 300° F. in one pass through a vertical oven formed with Chromalox Radiant Heaters.



ASPHALT-MELTING. Asphalt sealing compound is melted to provide proper "knit" between it and battery case. Bank of Radiant Heaters with variable control is installed in conveyor top. Side reflector sheets add efficiency.

Chromalox

Electric RADIANT HEATERS

For INFRARED

- Drying
- Evaporation
- Mass Heating
- Preheating
- Skin Drying
- Baking

and many other Applications

Quick, Low Cost Installation dependable service

FLEXIBLE! Easy to install in tunnels, single banks, double banks, ovens, etc. Gives infrared radiation in longer wave lengths which are absorbed almost equally well by all colors and textures of surfaces.

UNBREAKABLE! Rugged all-metal construction with aluminum body and shockproof, Inconel-sheathed CHROMALOX tubular heating element. Withstands shock, vibration, moisture and dust.

EFFICIENT! CHROMALOX tubular elements operate at 1400° F. Uniform, even heat—without "hot spots"—in low or high ambient temperatures. Units operate efficiently in all positions and at all angles.

COMPACT! Only 2 inches deep in nominal lengths of 2, 2½, 4, 5, 6 and 7 feet. Sections may be quickly interlocked to form their own oven, which can be further insulated for low, minimum heat losses.

CHROMALOX
Electric heat for modern industry

EDWIN L. WIEGAND COMPANY
7503 THOMAS BLVD. PITTSBURGH 8, PA.

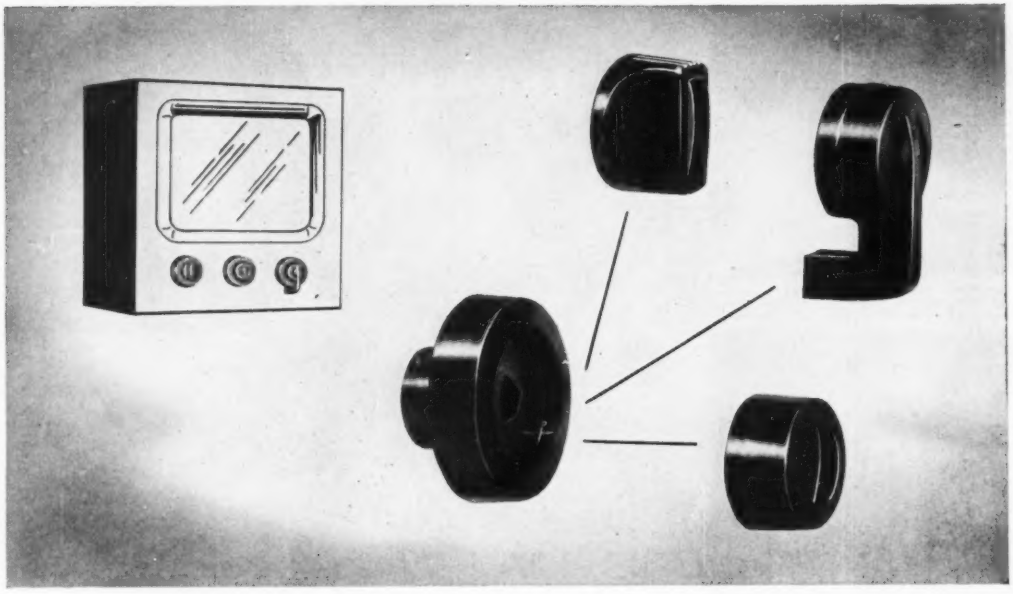
I'm Interested —

Send me complete application reports on Chromalox Electric Radiant Heaters

Name.....
Company.....
Street.....
City.....Zone....State.....
Number of Reports Required.....

IC-45

For a Clearer Production Picture...Tune in on



Standard TV Dual Control Knobs

HERE'S AN END to TV knob design problems and the high cost of custom knobs, too. Here's the Kurz-Kasch line of standard plastic dual control knobs—standardized for universal fit —standardized for dependable use— standardized for economy. With Kurz-Kasch TV knobs, you can begin to eliminate some of your costly assembly variables.

Because warp and cold-flow are best eliminated by thermo-setting materials, these knobs are compression-moulded for complaint-proof long life. Like all Kurz-Kasch standard parts, they are produced in a variety of dimensions, colors, finishes and decorative designs.

TV Dual Control Knobs are the newest additions to the Kurz-Kasch Standard Parts Line — long considered America's foremost source of standard plastic knobs and handles. For complete specification and dimensional data, write for Kurz-Kasch Specification Sheet No. 432. Or ask for new catalog 103A listing our complete line of TV Knobs, Radio Knobs, Instrument Knobs and Control Balls. No obligation.

Kurz-Kasch

FOR OVER 33 YEARS PLANNERS AND MOULDERS IN PLASTICS

Kurz-Kasch, Inc. • 1415 South Broadway • Dayton 1, Ohio

BRANCH SALES OFFICE: New York, *Lexington 2-6677* Chicago, *Harrison 5473* • Detroit, *Woodward 2-5214* Philadelphia, *Granite 2-7484* • Dallas, *Lakeside 1022* Los Angeles, *Prospect 7503* • St. Louis, *Rosedale 3542* Toronto, Canada, *Adelaide 1377*.

EXPORT OFFICES: 89 Broad Street, New York City, *Bowling Green 9-7751*.

Talk about Record Sales TO "END" USERS!

WATERPROOF baby pants are just one of the end uses where RESPROID is breaking sales records. All over the country this modern vinyl plastic is making friends—and profits—with its beauty and practicality. Whether you want new products to make or new ways to improve your present lines, RESPROID offers you a whale of an opportunity!

Manufactured in a wide variety of lovely styles, RESPROID is ideal for shower curtains, upholstery, luggage, aprons, waterproof garments, handbags—a range of products as limitless as your own imagination.

RESPROID is made to resist cracking, fading, scuffing and abrasion.

RESPROID comes in a rainbow of jewel-like colors and pastel shades—colors that are perfectly practical because RESPROID can be cleaned in seconds with just a damp cloth.

RESPROID adds up to a lot of very profitable business for you. Right now's the time to cash in on the popularity of this established material.

Respro Inc., Cranston 10, R. I.

* *Manufactured in a modern, fully equipped factory under strict laboratory control,* ***Resproid*** *is compounded of high molecular weight resins which can be processed only on the latest plastic equipment and which give greatly increased wearing qualities. Insist on the name* ***Resproid*** *when you buy.*

Resproid

TRADE-MARK REG. U. S. PATENT OFFICE

Guaranteed by Good Housekeeping

Turn your ideas into profits!

with

AMERAN resin paste

. . . a new Plastisol for dipping, coating or spreading

AMERAN resin paste may be just what you're looking for—to improve products, or to develop new and better ones economically.

This new plastisol can be used to make coatings or flexible sheets, maintaining permanent lustre. No solvents are needed. There's no fire hazard—no recovery problem. And American Anode can compound it to give you the qualities you want—oil-resistance, acid-resistance, chip-proofness, full variety of fast colors, including white.

Here are typical ways Ameran resin paste is used: for coating metal and wire, wire baskets, plating racks, pipe linings, wood, textiles and paper.

It can also be used for the manufacture of unsupported films and to make dipped gloves and other film applications. It's ideal for casting or molding finished items, such as toys, gaskets and industrial boots. These may give you ideas for more uses.

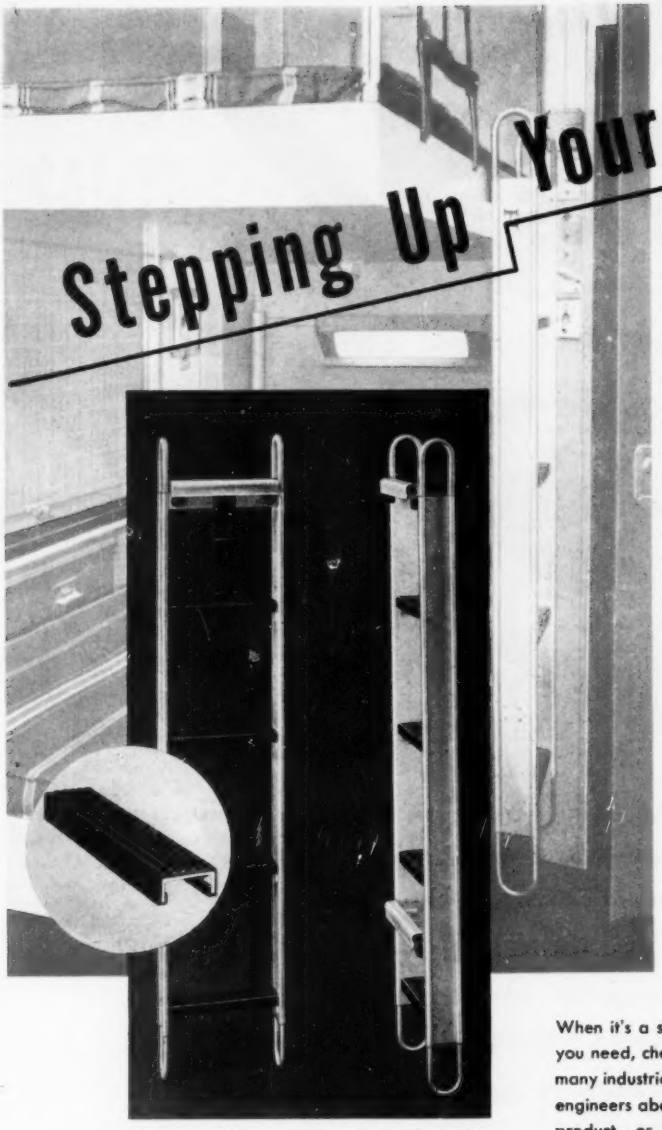
American Anode engineers are ready to help you with your problems or products. For complete information, please write Dept. AD-5, American Anode Inc., 60 Cherry St., Akron, Ohio.

AMERICAN ANODE

CRUDE AND AMERICAN RUBBER LATICES, WATER CEMENTS AND SUSPENSIONS, AMERAN RESIN PASTES

Stepping Up Your Product

—Via the MACOID Route!



This aluminum ladder produced by Moynahan Bronze Company is light for ease of handling; rugged for long wear, safety, and low maintenance. Inset shows Vinylite step-covering.

TAKE THESE STEPS:

THE IDEA:

To develop a step-covering for a new, lightweight, sleeping car ladder.

THE PROBLEM:

To select a material that was durable and easy to clean, yet economical. A smooth, glossy finish to conform to the design of the ladder was desirable.

THE RESULT:

MACOID was selected to produce the Vinylite step-covering. MACOID's production facilities and prompt service were important factors.

When it's a supplier of plastic parts or products you need, check with MACOID. Manufacturers in many industries are constantly consulting MACOID engineers about using plastics in designing a new product, or redesigning a present one. Let MACOID, at no obligation, help you crystallize an idea and make it a reality.

Originators of Dry Process Plastics Extrusion

DETROIT MACOID CORPORATION

Extrusion and Injection Molding • 12346 CLOVERDALE, DETROIT 4, MICH.

WHAT'S COOKING AT PROLON PLASTICS?

Hundreds of thousands of compression molded, heat-resistant phenolic handles for The Aluminum Cooking Utensil Company!

Prolon's Product Control maintains the exceptional quality of finish and uniformity required to meet "Wear-Ever" standards.

Prolon designed and built the molds.

COMPLETE CUSTOM MOLDING SERVICE

Research • Design • Engineering • Die Making

COMPRESSION AND INJECTION

For better quality, better service, write to

PROLON PLASTICS

A Division of Pro-phy-lac-tic Brush Company, Florence, Mass.

11

SANTICIZERS

. . . OUTSTANDING, ECONOMICAL PLASTICIZERS TO MAKE

Better films

Better lacquers

Better molded products

Name the property you want in your product, and we will tell you the Santicizer that will deliver it. That's right! Santicizers have been developed so that they give you tailor-made performance in films, lacquers and molded products.

The Santicizers deliver such properties as low toxicity, improved processing qualities, low-temperature flexibility, flame resistance, light stability, low volatility, resistance to embrittlement, solvent resistance. They permit the manufacture of products that are crystal clear or absolutely opaque. A rainbow range of colors is possible because you can select Santicizers that do not impair colors.

Monsanto Santicizers are available for immediate delivery at favorable prices. For complete details, quotations and technical assistance in the selection and use of Santicizers, mail the coupon, contact the nearest Monsanto Sales Office or write: MONSANTO CHEMICAL COMPANY, Desk K, Organic Chemicals Division, 1707 South Second St., St. Louis 4, Missouri.

Santicizer: Reg. U.S. Pat. Off.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada Monsanto (Canada) Ltd., Montreal.

How Santicizers team with resins

▨ Denotes: Of Use
■ Denotes: Of Special Value

	SANTICIZER 1-H	SANTICIZER 3	SANTICIZER 8	SANTICIZER 9	SANTICIZER B-16	SANTICIZER E-15	SANTICIZER M-17	SANTICIZER 90	SANTICIZER 140	SANTICIZER 141	SANTICIZER 160
Alkyds	■			■	■	■	▨	■			
Butadiene-Acrylonitrile					■	▨	▨		■	▨	
Cellulose Acetate	■	■	▨	■	▨	■	■	▨	■	▨	▨
Cellulose Acetate-Butyrate	■	■	■	▨	■	▨	▨	▨	■	▨	■
Cellulose Acetate-Propionate	■	■	■		■	▨	▨		■	▨	■
Cellulose Nitrate	▨	▨	▨	▨	■	▨	▨	▨	■	▨	■
Chlorinated Rubber	▨				▨	▨	▨		▨		
Ethyl Cellulose	▨	■	■	▨	▨	▨	▨	▨	■	▨	■
Melamine-Formaldehyde				■				▨			
Phenol Formaldehyde	■		■	■	▨		▨	■	▨		
Polyamide		■	■	■				■			
Polyvinyl Acetate	■	▨	■	▨	▨	▨	▨	■	■	▨	■
Polyvinyl Butyral					■	▨	▨		■	▨	■
Polyvinyl Chloride					■	▨	▨		■	▨	■
Polyvinyl Chloride-Acetate					■	▨	▨		■	■	■
Polyvinyl Formal			▨			■	▨		■		▨
Polystyrene	▨		▨		▨	▨	▨		■		■
Santolites	▨	■	■	▨	▨	■	▨	▨	■		
Shellac	▨	▨	■	▨	▨	▨	▨	▨			
Urea-Formaldehyde		■	■	■				▨			
Zein and Casein		■	■	▨							
Acrylates			■		■	■	■			▨	■

MONSANTO
CHEMICALS and PLASTICS

MONSANTO CHEMICAL COMPANY,
Desk K, Organic Chemicals Division,
1707 South Second Street, St. Louis 4, Missouri

Please send data and quotations on Santicizers for use with_____

in making_____

Name_____ Title_____

Company_____

Street_____

City_____ Zone____ State_____

SERVING INDUSTRY . . . WHICH SERVES MANKIND

SPECTACULAR

MASS PRODUCE

48-60 AND 80 OZ. INJECTION MOLDINGS AT STARTLINGLY LOW PRESSURES

NEW J-C PRESS IS LIGHT IN WEIGHT, LOW IN PRICE AND CHEAPER TO OPERATE AND MAINTAIN

THE NEW and SPECTACULAR J-C PRESS . . . offers super-size injection moldings . . . larger than ever before . . . at astonishingly low pressures, amazingly faster cycles, and startlingly low costs.

Because of the radical new J-C design, (actually it is an extruder and a vertical transfer-type press), the J-C Press operates on an uninterrupted high speed schedule. Automatic timers control each step in the press operation — completely plasticizing, feeding, injecting, clamping, cooling and opening. There *is* no down time.

Features of this machine are the specially-built extruder which completely and uniformly plasticizes and feeds the molding compound automatically into the injection chamber in exact one shot doses, and the complete absence of any spreader or torpedo in the injection chamber. This makes possible the relatively low injection pressures with their correspondingly low clamping pressures. These low pressure features permit the use of relatively light construction for the vertical transfer-type press. Furthermore, it is not necessary to use large pumping equipment, all of which reduces initial and operating costs.

Besides offering the advantages of quality in quantity at low costs, operators of this new machine are assured that it is built with all the know-how of a firm that has been building extra large and heavy machinery since 1881.

Note: While the small machine is rated at 48 ounces, it can be metered down to 4 ounces with perfectly satisfactory results.

* Patent Applied for

WRITE NOW FOR COMPLETE INFORMATION

The spectacular J-C Press opens up a new and virtually untapped market for large thermoplastic pieces throughout the industrial world. Act now to insure your position in the field by writing today for detailed specifications, prices and delivery dates on the model (48-64 or 80 oz) whose capacity fits your needs.

WORK WELL DONE, SINCE '81

J-C

Jackson & Church

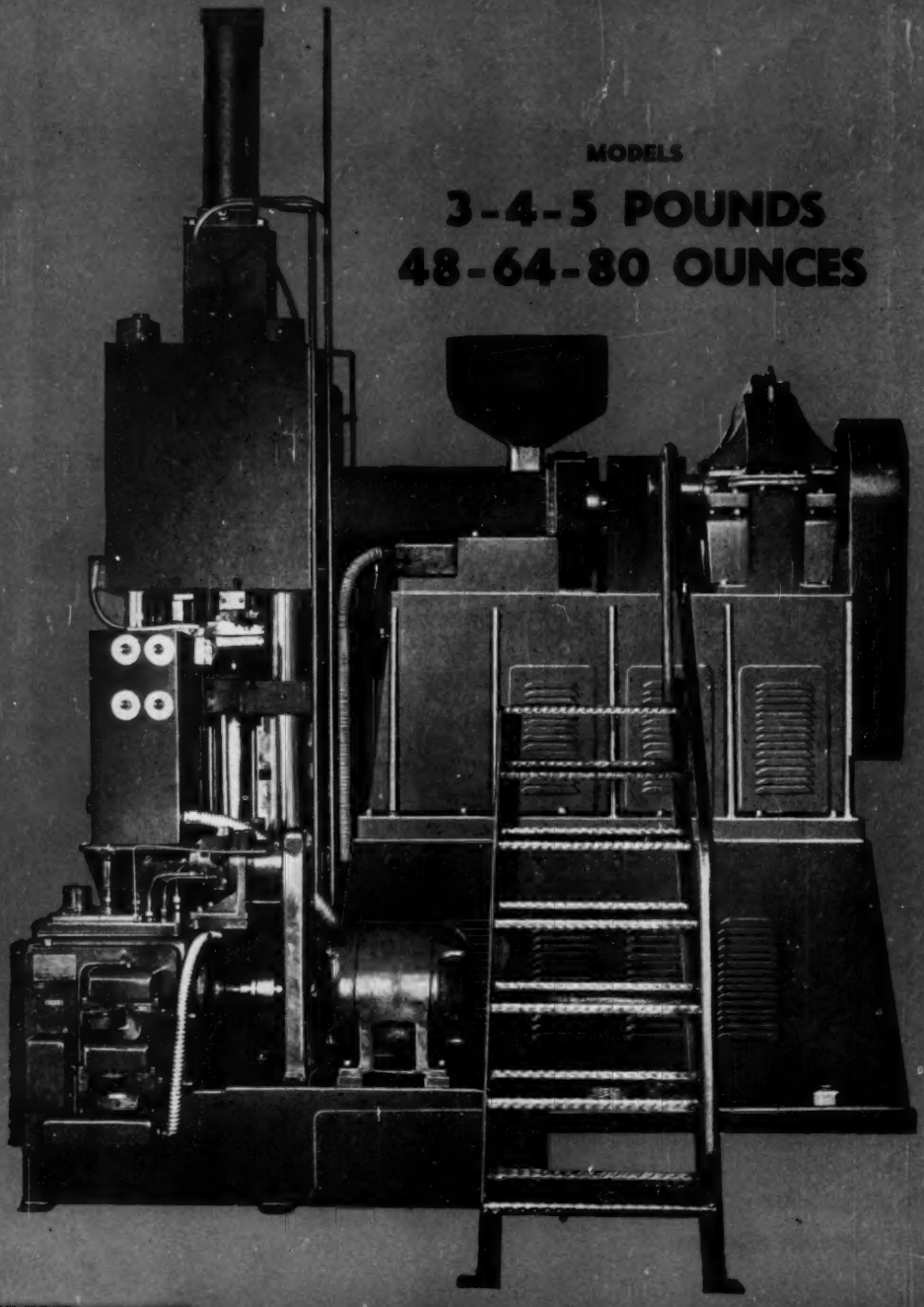
COMPANY

SAGINAW, MICHIGAN

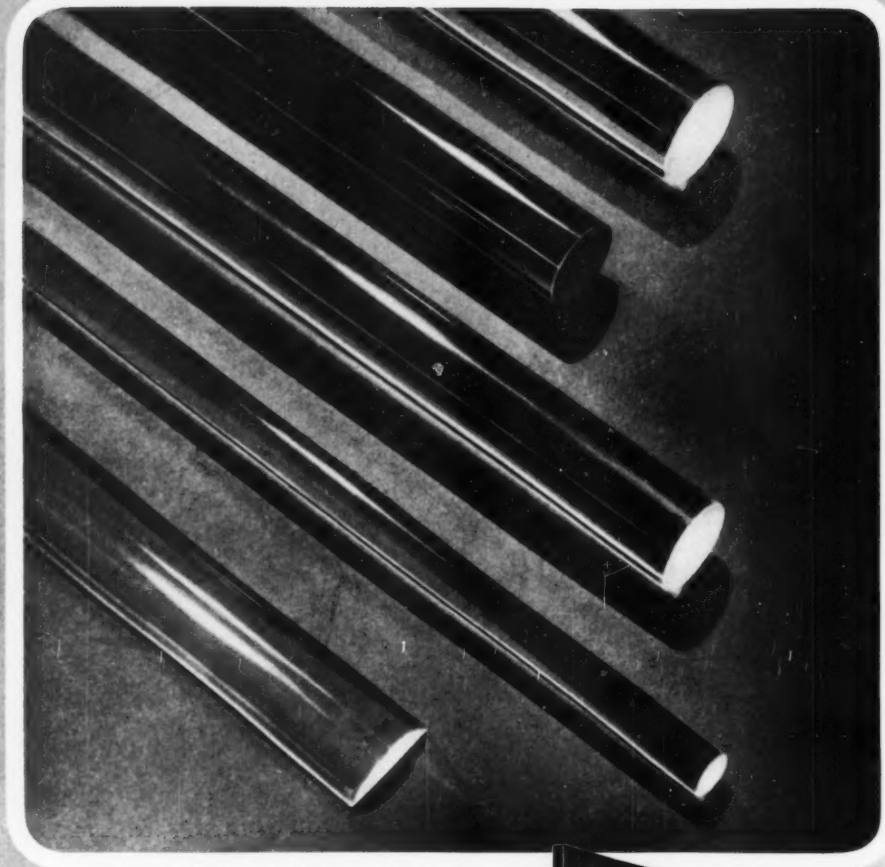
J-C PRESSES*

MODELS

3-4-5 POUNDS
48-64-80 OUNCES



DON'T SPARE THIS ROD



Available now for immediate delivery, Plax polystyrene rod is an ideal insulating material. Easily fabricated, it features very low power losses, low water absorption and has a high voltage break down. It is not affected by humidity, nor by the temperatures within its temperature range.

Plax supplies the rods in diameters of ⅛" up to 2" in 4' and 6' lengths. Slugs are also available in diameters of 2¼" up to 6". Both rods and slugs can be machined as the strains have been removed by Plax's special annealing process. Please write Plax for details.

PLAX
FOR PLASTIC
SHEET ROD & TUBES
NOT SUBSTITUTES ··· IMPROVEMENTS

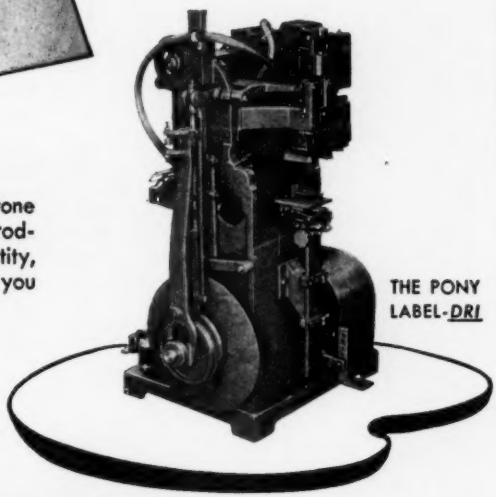
PLAX CORPORATION DIVISION, HARTFORD-EMPIRE CO.
P. O. BOX 1019 ★ HARTFORD 1, CONNECTICUT
In Canada — Canadian Industries, Ltd., Montreal

EXTRA COLOR *in* PLASTICS

- ★ DECORATION
- ★ TRADE MARKS
- ★ LABELING

COLOR—a touch, or a *splash!* added to a monotone plastic "lifts" it into the realm of NEW and *better* products. Solid color or many colors, give swifter identity, have more eye-pulling power . . . and the colors you want are so easily applied by the LABEL-*DRI*,* with a capacity of 60 per minute, utilizing *plastic-coated* labels that become a part of your product instantly, permanently, and in perfect register.

Ask for details—and examples!



THE PONY LABEL-*DRI*

NEW JERSEY MACHINE *Corporation*

1600 WILLOW AVE. • HOBOKEN, N. J.

Factory Sales and Service Branches at
Chicago, 325 W. Huron Street
Cincinnati, 1701 Carew Tower
Los Angeles, 2500 W. 6th St.

LABEL-*DRI* uses NO glue, puts EXTRA color in Plastic products. A logical improvement in adding decorative effects similar to embossing, decals, die stamping, etc.

600 *Reg. U. S. Pat. Off.

THE PENALTY OF LEADERSHIP

Guardianship

Most difficult of the many penalties of leadership is the guardianship of standards.

To pattern after a leader is normal. For it is the leaders who pioneer and show the way . . . who establish the precepts and standards of practice. But they who would profit through lip service only, to those standards, steals but momentarily that which enriches them not and, denies the mantle of respect under which cover is furtively sought.

But, for that interim period during which the mills of the Gods are grinding slowly, and exceeding small, and the inexorable and inescapable working of the laws of reputable behaviour have imposed their sentences, it is hardly fair that the buyer of a product should invest under the mask of misapprehension so cunningly fabricated for his confusion.

So, certain deterents in the form of patents, copyrights, trade names and trade marks were devised.

Therefore when we stress the fact that the name TUPPER (in either of the two forms you see here) is at once a trade mark . . . a trade name and so say, in effect, "this is our pledge that we will keep faith with you", it is an acceptance and acknowledgment of our obligation to shoulder our share of the burden of guardianship of standards for your protection.

TUPPER

TUPPER!

This smart table setting with TUPPERWARE pictures a breakfast table that says "Good morning" and means it. This is as it appeared in the article "Housewares Award" to Tupper Corporation in the September 1948 edition of Modern Plastics.

Bearing the name TUPPER, are many items, designed for and accepted as, definite contributions to the American way of Life. These same pieces possess like attributes when employed in many services for which they were not originally designed. But if you feel, after discussion with our Development Department, that your requirements would best be served through specific design, you may be assured they will be endowed with identical values.

TUPPER CORPORATION

Manufacturers of CONSUMER, INDUSTRIAL, PACKAGING AND SCIENTIFIC PRODUCTS

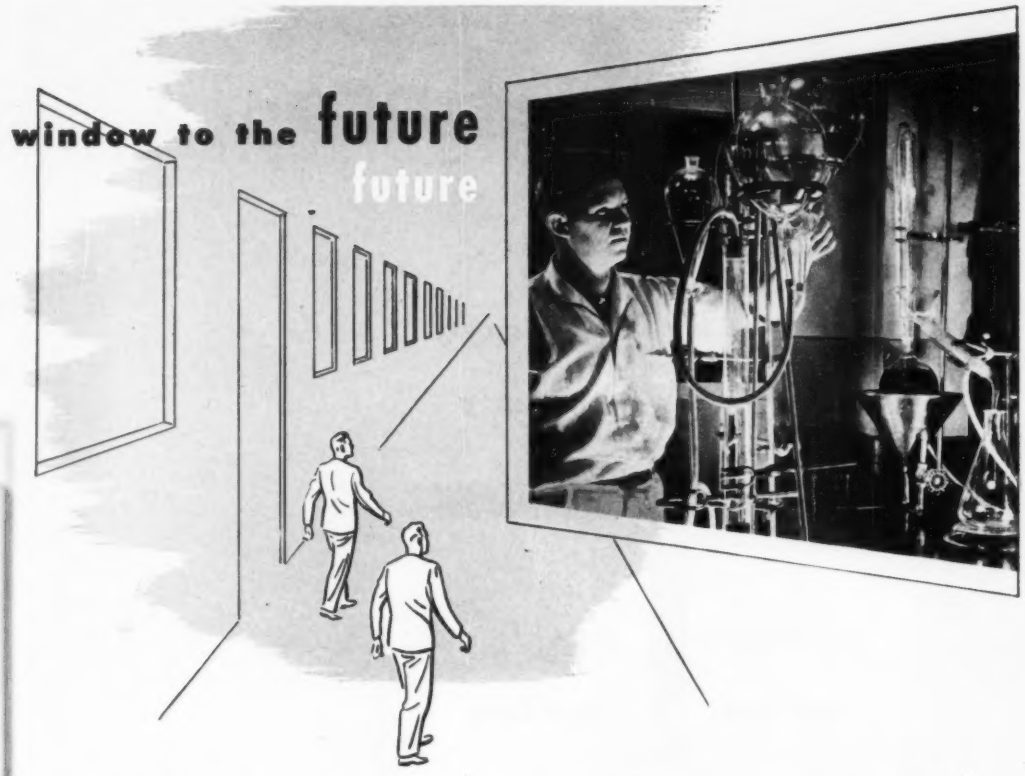
FACTORIES: Farnumsville, Mass., and Cuero, Texas

New York Show Rooms 225 Fifth Ave.

ADDRESS ALL COMMUNICATIONS TO: Development Department D

COPYRIGHT TUPPER CORPORATION 1949

superior
low temperature
flexibility
top
plasticizing
efficiency
excellent
modulus
low
heat loss
PLASTICIZER SC
E. F. DREW & CO., INC.
15 EAST 26th ST., NEW YORK 10, N. Y.
BRANCHES
BOSTON · Chamber of Commerce Building
CHICAGO · 360 N. Michigan Avenue



● Down this Pfizer corridor walk scientists with ideas for the future. Look through the laboratory windows on either side. Here you will see a better way of life emerging . . . now slowly . . . now with giant strides.

It has been Pfizer's aim to attract scientific talent and then to provide the vital environment — spotless laboratories, completely equipped, where these minds can freely create marvels for mankind which will transcend our present way of life.

Overshadowing research in size and personnel, but not in importance, are Pfizer's three efficient industrial plants. With the guidance of skilled personnel, they are the means of mass-producing the technical harvest of the laboratory.

But the greatest contribution by far — linking past and present with the future — is Pfizer's pioneering tradition in chemistry. New frontiers await. On these frontiers the same principles which charted our past course will guide us in the future. Intangible these aims — intangible these principles, but they are as enduring as the Pyramids. **Now starting our second century, we pledge for the future:**

Quality Chemicals to Sustain, Nourish and Better Human Life

PFIZER

QUALITY FOR 100 YEARS

Chas. Pfizer & Co., Inc., 630 Flushing Avenue, Brooklyn 6, N. Y.; 425 N. Michigan Avenue, Chicago 11, Ill.; 605 Third Street, San Francisco 7, Calif.

PREGWOOD
does it better!

SCORES OF INDUSTRIES have already discovered Formica Pregwood. Made of selected wood veneers, impregnated with thermosetting resins and compacted under heat and pressure, Pregwood has infinite uses. Textile machinery, sporting goods, musical instruments, handles for tools and cutlery, aircraft propellers—these are but a sampling of Pregwood's many applications. If Pregwood's outstanding advantages suggest a use in your product, let's join forces. Our engineers are always on call. Write today!

✳ Greater mechanical strength,
lower moisture absorption,
better machinability,
plus wood's natural beauty.

THE FORMICA CO.
4531 SPRING GROVE AVE.
CINCINNATI 32, OHIO

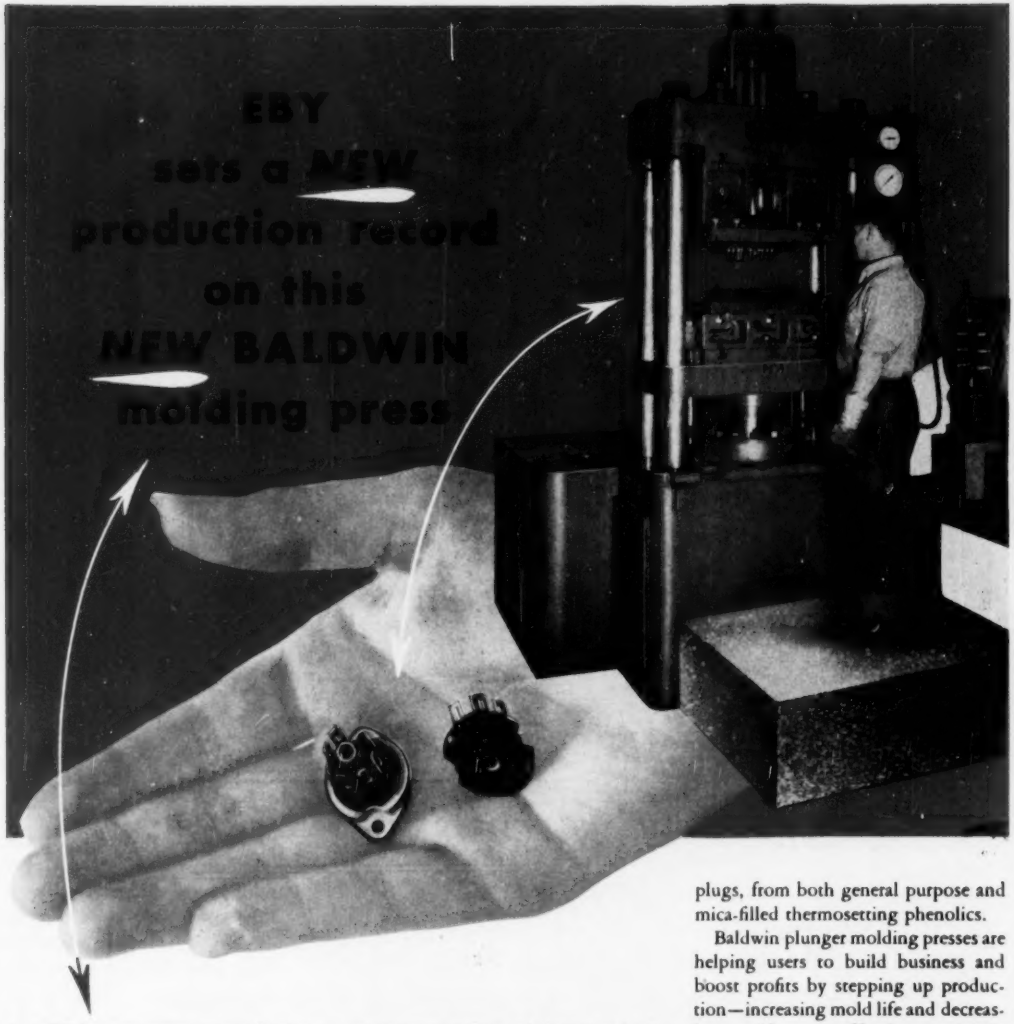
Productive
FORMICA
Reg. U. S. Pat. Off.
at Work in Industry

DURITE

★ FAST CURE ★ IMPACT STRENGTH
★ DURABILITY ★ RESISTANCE TO MOISTURE
★ EXCELLENT MOLDING CHARACTERISTICS

Five reasons why Durite Phenolic Compounds are ideal for rugged applications, such as this heavy duty washing machine agitator, weighing 12 lbs., for commercial use produced by Techart Plastics Company, Molders.

THE BORDEN COMPANY
Chemical Division
350 MADISON AVE., NEW YORK 17, N. Y.



A 20% improvement in production was effected in the plant of Hugh H. Eby Company, Inc. in the first three weeks after their Baldwin 100-ton Plunger Molding Press was installed. Accelerated curing, coupled with the high-speed travel of clamping ram and top plunger is credited with a major share of the credit for this impressive increase in output.

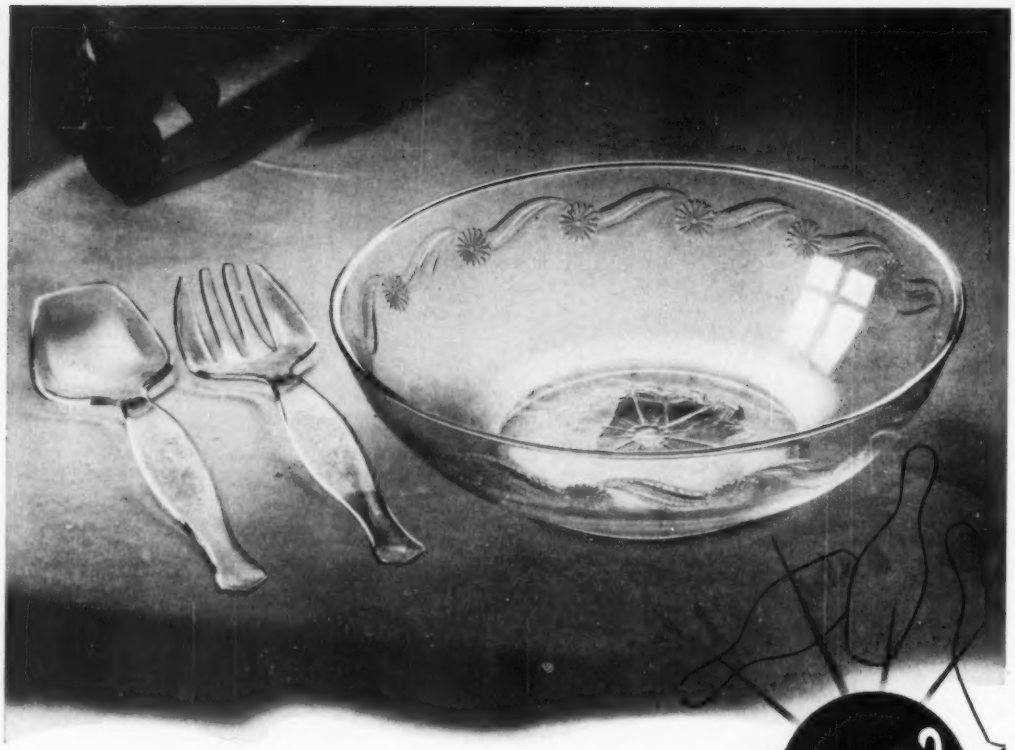
Initial press assignment was on a molded socket for all types of electronic equipment using miniature tubes. Because the amount of flash was minimized by the new process, there was a substantial saving in material, and a great reduction in finishing time.

The Eby Company—one of the oldest component parts manufacturers in the radio and electronics field—is also utilizing the new Baldwin press to produce sockets for picture tubes in television sets, in-the-line fuse holders, cathode-ray tube sockets, and speaker plugs, from both general purpose and mica-filled thermosetting phenolics.

Baldwin plunger molding presses are helping users to build business and boost profits by stepping up production—increasing mold life and decreasing mold cost—effecting materials savings . . . reducing curing time, and cutting maintenance. For details, ask for Bulletin 251.

The Baldwin Locomotive Works, Philadelphia 42, Pa., U. S. A. Offices: Boston, Chicago, Cleveland, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Washington. In Canada: Baldwin Locomotive Works of Canada, Ltd., Toronto, Ontario.

BLW THE BALDWIN GROUP **BALDWIN** | **HYDRAULIC PRESSES**



want to bowl a "strike" in SALES?

THERE WAS A TIME when only the very, very rich could afford salad bowls that looked anything at all like the one illustrated above.

Today, millions of homes can afford gorgeous table-ware that rivals the most expensive crystal—thanks to Columbia's creative and engineering know-how, and extensive facilities for producing plastic products in mass volume.

The flawlessly molded salad bowl set you see here is just one item among scores of fast-selling plastic products designed and produced by Columbia.

If you want the finest in custom molding service—for plastic products in great volume—at a sensible price—it will pay you to talk over your problem with Columbia.

COLUMBIA PROTEKTOSITE COMPANY, INC., CARLSTADT, NEW JERSEY

New York Showrooms: Empire State Building

Columbia

COLUMBIA 25 ANNIVERSARY

ELMES HOBBING *cuts* CAVITY COSTS

Power, plus precision, plus control—that's *Elmes* hobbing presses—in sizes to 5,000 tons, and larger, for sinking hardened hobs into cold steel. It's the modern, *economical* way to produce duplicate die inserts, multi-cavities—even single-cavity molds with hard-to-make contours. Compact Elmes presses, with their rigid three-column design and sensitive control, assure precise, accurate work—whether it's one cavity, or many just alike.

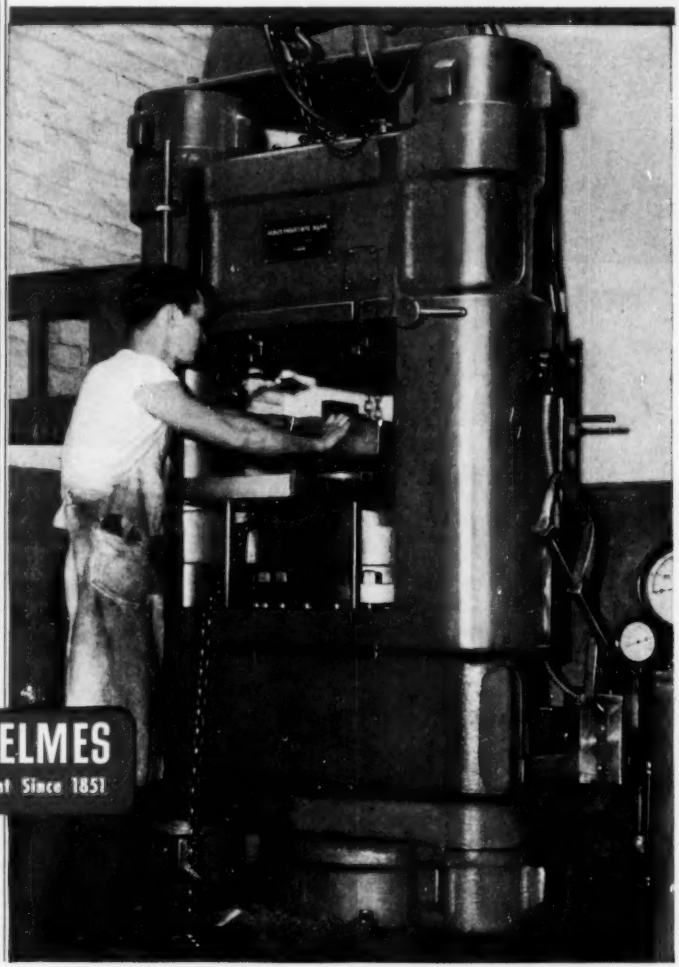
EASY TO USE

Elmes hobbing presses respond quickly and unfailingly. They start at quick-closing speed; change to pressing speed automatically when the hob contacts the blank. *They can be stopped instantly.* Operators have *confidence* in Elmes presses—and that's important, for it encourages exactness, cuts rejects, saves time *and money.*

HYDRAULIC PRESSES FOR EVERY PURPOSE

Whatever your pressing problem, check with Elmes. Objective engineering, backed by *nearly a century* of successful hydraulic experience, makes Elmes presses *right* for each job—for *cutting costs* on long runs or short—for *earning profits.* Write for literature.

ENGINEERED BY ELMES
Good Hydraulic Production Equipment Since 1851

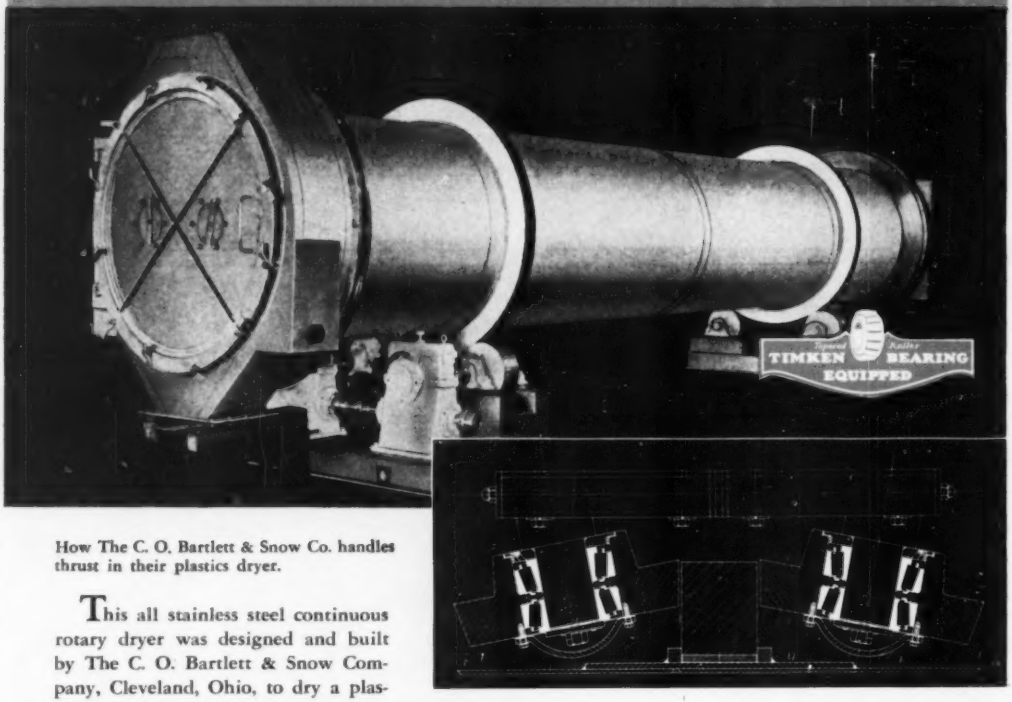


1500-ton Elmes hobbing press at Reinhold-Geiger, Los Angeles.

ELMES ENGINEERING DIVISION *of* AMERICAN STEEL FOUNDRIES, CINCINNATI 29, OHIO
Distributors in Principal Industrial Centers • Also Manufactured in Canada

METAL-WORKING PRESSES · PLASTIC-MOLDING PRESSES · EXTRUSION PRESSES · PUMPS · ACCUMULATORS · VALVES · ACCESSORIES

HOW TIMKEN® BEARINGS HELP KEEP A PLASTICS DRYER DRYING



How The C. O. Bartlett & Snow Co. handles thrust in their plastics dryer.

This all stainless steel continuous rotary dryer was designed and built by The C. O. Bartlett & Snow Company, Cleveland, Ohio, to dry a plastic molding powder. The very high polish of the interior stainless surfaces facilitates thorough cleaning to prevent spoilage between different grades and colors.

The dryer is 35 feet long, 5 feet in diameter and revolves on trunnion rollers mounted in Medart pillow blocks equipped with Timken tapered roller bearings. The barrel is motor driven through two, type AT medium duty Philadelphia Gear Works worm gear speed reducers connected direct to the driving trunnions. The worm gear shafts of the reducers also are mounted on Timken bearings.

To care for the thrust load set up by the inclination of the cylinder, two, 15½" diameter thrust rollers equipped with Timken bearings are used. These thrust rollers operate against the sides of the driven riding ring.

Thus completely equipped with Timken bearings, the dryer is fully protected against friction, wear, radial and thrust loads, and misalignment of moving parts.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

For efficient, dependable and economical operation, low maintenance and long equipment life, make sure you have Timken bearings in plastics equipment of all kinds—wherever wheels and shafts turn.

THE TIMKEN ROLLER BEARING COMPANY
CANTON 6, OHIO
Cable Address "TIMROSCO"

NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊃ BEARING TAKES RADIAL ◎ AND THRUST →◎← LOADS OR ANY COMBINATION

PLASTIC FASHIONS

*"Bonded Beauty"** PLASTIC FABRICS

—best by test!

Available in more than sixty exquisite patterns and over twenty shades of plain colors, translucents, opaques, metallics and quiltings. Widths 36" and 54".

"Bonded Beauty" plastic fabrics are tested for light stability, will not crack or peel, are flame retardant, acid, grease and waterproof.

Special colors, gauges and widths made to order . . . Thickness from 0.004" to 0.025".

"Bonded Beauty" plastic fabrics are used by leading manufacturers in a variety of finished products.

"Bonded Beauty" plastic fabrics are sold at leading department stores at yard goods, curtain and drapery counters all over the United States.

All inquiries invited and samples sent upon request.

thermoplastic fabrics
CORPORATION

*Reg. Trade Mark

1457 BROADWAY LO 4-3550-1-2 NEW YORK 18, N. Y.

Improve YOUR VINYL FILM

. . . with "Plastolein"* 9058 Dioctyl Azelate

BETTER
- Drape
- Light Resistance
- Water Resistance
- Clarity

BETTER
- Processing
- Cold Flex
- Color
- Stability

Recommended for:
Film, Artificial Leather, Garden Hose, Organosols, Plastisols, Extrusion Compounds!

OTHER EMERY "PLASTOLEIN"* PRODUCTS

PLASTICIZERS
For Vinyls, Cellulosics, and Rubber

Plastolein 9050 Di-2-ethyl Butyl Azelate
Plastolein 9055 Diethylene Glycol Dipelargonate
Plastolein 9250 Tetrahydrofurfuryl Oleate
Plastolein 9715 Resinous Plasticizer
Plastolein X960R Resinous Plasticizer

"EMERSOL"* FATTY ACIDS
For Alkyd Resins

Plastolein 9035 Fatty Acid I.V. 135-145
Plastolein 9315 Fatty Acid I.V. 145-160
Plastolein 9622 Double-Distilled Coconut Fatty Acid

SPECIAL ACIDS

Plastolein 9110 Azelaic Acid $C_7H_{14}(COOH)_2$

A dibasic acid for manufacture of plasticizers; soft, flexible alkyds; specialty products.

Plastolein 9114 Pelargonic Acid $C_8H_{17}(COOH)$

A nine carbon monobasic acid for modifying alkyds; for the manufacture of plasticizers; perfumes; and specialty products.

M 461 R Dimer Acids $C_{34}H_{62}(COOH)_2$

Available for the first time in tank car quantities. A low cost, high purity dilinoleic acid. Many uses—especially for alkyds, varnishes, etc.

EMERY INDUSTRIES, INC.

PLASTICIZERS • OLEIC ACID • STEARIC ACID • TWITCHELL PRODUCTS • ANIMAL, VEGETABLE, FISH OIL FATTY ACIDS

*Registered Trade Marks of Emery Industries, Inc.

4206-19 CAREW TOWER, CINCINNATI 2, OHIO
Export Department: 30 Rockefeller Plaza New York 20, New York

MODERN PLASTICS

Success is in Sight for the REINFORCED POLYESTERS

With new techniques, new resins, new fillers, and a new approach to applications, the former "low pressure" plastics are finding new and lucrative markets

IN volume of resin used — in 1949 about 1,850,000 lb. of polyesters — the reinforced plastics business is still small. Its record of progress has been erratic. The past profit and sales record of more than a few of its processors has not been good. Many applications have come, temporarily caused a lot of excitement, and faded out, usually because of cost.

But a change has taken place in the past year or so — a change justifying the title of this article.

If the reader will refer to "Economics of Low Pressure Plastics", MODERN PLASTICS, April 1947 issue, page 95, he will be better able to appreciate the present improvements in resins, fillers, techniques, and marketing methods, better able to understand the reasons behind some of the new and pending applications. In a panel accompanying that article it was suggested that "low pressure" was gradually becoming part of the high pressure field; it is not coincidence that old-line custom compression molders like American Insulator Corp., Auburn Button Works, Inc., Waterbury Companies, Inc., General American Transportation Corp., and The Boonton Molding Co., have now moved into reinforced plastics! Neither is it coincidence that there are now eight or nine manufacturers of polyester resins, four of them newly come into the market.

When, last year, the Reinforced Plastics Div. of S.P.I. replaced the old Low Pressure Industries Div., there came more transfer of method information and a needed firm approach to material standards. This one division of S.P.I. is big enough and interested enough in technical progress to hold its own national conference. Its forums are dynamic, polemic — and are becoming resultful.

As in the 1947 article the present discussion will concern glass mat and glass fabric fillers for reinforced moldings, papers for continuous laminations, and polyester resins for both—because those materials are most widely used in the field.

Progress in polyester molding

Method of molding polyester-glass fiber pieces is determined by a) size of piece, b) shape of piece, c) whether piece must be mold-finished on both sides, d) strength properties required, e) number of pieces to be produced, f) the knowledge and know-how of the molders. (*Turn to next page*)

1—Reinforced plastic replaces wood in bakery tray. New tray is lighter, has more capacity, is easier to clean

PHOTOS COURTESY AMERICAN CYANAMID CO.

2—Molding a reinforced bakery tray. A) Positive matched metal dies are accurate and highly polished. B) Pouring preweighed quantity of resin mixed with extender and catalyst. C) Piece comes from mold ready for edge trim. D) New trays increase truck capacity by 50 sq. ft.

In general, reasonably sized pieces to be produced in quantity are made today in *matched metal dies.* These dies are less expensive than molds for injection or compression molding but are still much higher in cost than tools formerly considered adequate for polyester-glass fiber molding. Advantages of matched metal dies are that the resulting products have two good surfaces; handling and finishing costs are lowered by cut-off rings on the molds.

Two kinds of matched metal molds are used in this work: the shoulder type which closes off and limits pressure, and the positive telescope type which seals in the resin and puts the pressure on it. The latter allows use of fairly high pressures, makes for complete copolymerization and cure in the mold, speeds cycles, and eliminates likelihood of bubbles in styrene-base polyesters. Open flash type molds are not recommended, except where low volume is involved and surface characteristics are not a problem. Such molds allow resin to escape and may permit too much pressure on the filler.

A typical example of a positive reinforced plastics molding job is the large bakery delivery tray (Fig. 2) made by Molded Resin Fiber Co., Ashtabula, Ohio, for Purity Bakeries, Chicago, Ill. The wood tray which it replaced was 25¾ in. sq. by 2 in. high made from a plywood sheet set into four hardwood rails around the outside of the sheet. It could not be washed. The rails, screwed together at the corners, often came loose and required reinforcing with steel.

The new tray of Fiberglas-reinforced Laminac plastic is 25¾ in. sq. by 1⅛ in. deep. A lay-up of polyester-bonded Fiberglas mat, precut to size, is tailored to give proper reinforcing in all areas; Fiberglas cord, pre-wet with resin, is molded into the top of the sides of the tray to improve tensile strength and shock and impact resistance. After the tailored lay-up is placed in the cavity, a measured amount of resin is poured in, the mold is closed, then 40 tons pressure applied for 2½ min., and the press opened. Finishing consisting of removing a slight amount of flash with a file.

The tray business is opening up rapidly. Molded Resin Fiber Co. has a job in hand (Fig. 1) for Continental Baking Co., New York, N. Y. This unit, 21 by 24½ in., has a welded steel rod molded in its edge, the glass mat being folded over the bent rod and stapled in position. The job runs on a 2½-min. cycle with two-step press closing, and comes out completely finished except for edge sanding. It is worth noting that 50 tons pressure is needed to close the press on this piece — and 35 tons to open it.

Laminated Plastics, Inc., Cleveland, Ohio, another competent manufacturer in this field, is producing trays and tubs of a variety of sizes for use in the chemical and material handling fields. These trays, sold under the trade-name Glastic, will resist temperatures as high as 350° F. for long periods and are so chemically resistant that they are used in place of stainless steel and porcelain enamel steel in chemical drying and crystallizing work. They are also used for food storage. In certain of these applications the trays have shown a life span up to 10 times that of the ones previously used, and in some applications an important reduction in product contamination has been achieved. This is particularly true with materials containing hydrochloric or sulfuric acids.

A typical example of this chemical application is found in trays supplied by Laminated Plastics to Merck & Co., Rahway, N. J., where powders and granules are dried in 25 by 26 in. trays, 2 in. deep.

A piece produced in shoulder-type metal molds is the General American Transportation chair described on page 155, MODERN PLASTICS, November 1948. The shoulder acts as a cut-off ring by squeezing the fiber. The product, first produced in phenolic impregnated sisal fiber, is now made of glass mat fiber and polyester resin.

D. S. Kennedy & Co., Cohasset, Mass., uses male

and female shoulder type molds of cast aluminum and a 30-min. cycle to mold the radome shown in Fig. 3.

The second method of press molding reinforced plastics is by means of a *metal female die* and a *flexible male die* made of rubber or a vinyl elastomer, which may or may not be inflated. This type of mold permits vertical walls on the piece and undercuts on the inside—but only the outside is mold-finished. It also permits production of larger pieces.

A piece so made in quantity is the Glastic railway seat arm end made by Laminated Plastics, Inc., and described on page 105, MODERN PLASTICS, December 1948.

Any reasonably sized piece may be press-molded in this manner if it needs press finish on only one side. If it can be made in a two-part female mold, any number of exterior undercuts are possible. The new Sears, Roebuck molded-fiber plastic rocking horse shown in Fig. 5 has a body made by Moulded Products, Inc., Spring Park, Minn. It will support at least 200 pounds.

Metal dies are required for all press molding work and today there is available a wide range of metals and mold making techniques to suit the purposes and the cost requirements of any job. Steels (except for the hardened cut-off rings) do not need to be as strong or as expensive as those for high pressure molding. Cast and machined aluminum is quite satisfactory for many jobs. Kirksite, Meehanite, and electro-formed copper and nickel, properly backed, are widely used where molding involves long cycles and low pressures.

Non-press reinforced moldings

Non-press molding of reinforced plastics is accomplished by a) bag or diaphragm male pressure into female molds of metal or other material; b) female bag molding over solid male molds; c) no-pressure or "cast" molding such as the Beetle boat job described on page 103, MODERN PLASTICS, September 1949; and d) "resin-injection" molding, on which a patent has been applied for by Marco Chemicals, Inc., Sewaren, N. J.

Figure 4 shows this "a" type of operation on a fuselage nose intake fairing at North American Aviation, Inc., Los Angeles, Calif. The plug or male in this case is a vinyl film bag.

U. S. Plywood Corp., New York, N. Y., produces its Glasweld tubing and piping (Fig. 6) by convolutely wrapping glass cloth on an aluminum mandrel and impregnating with various polyesters. Not only is this practical from a production standpoint but it gives the interior of the pipe a smooth surface. For Frontier Aircraft Corp., Buffalo, N. Y., Atlas Plastics, Inc., Buffalo, N. Y., molds an antenna pole (Fig. 7) in individual sections on steel mandrels, the pressure used being only wrappings of cellophane. The famous Navy 28-ft. personnel boat built by Winner Mfg. Co., Inc., Trenton, N. J., was produced in a huge welded aluminum mold backed by a heavy steel framework with male rubber bladder for pressure.

Atlas Plastics, Inc., molds the Fiberglas-polyester amusement-park locomotive shell shown in Fig. 8 for Railmaster Co., Buffalo, N. Y., by vacuum bag in a plaster female mold, using infra-red heating.

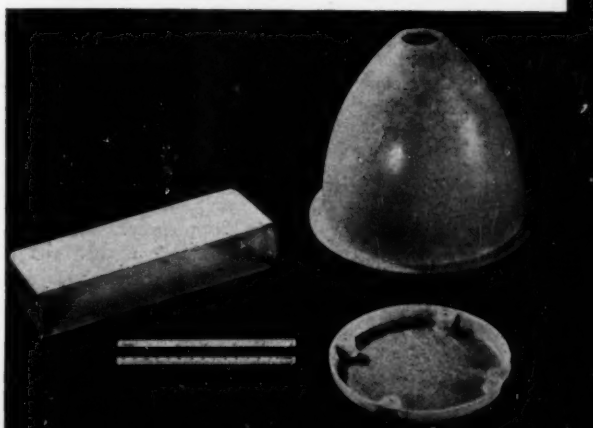
Plaster is also used by D. G. Williams, Inc., Brooklyn, N. Y., as mold material for a fully closed baking mold for polyester-glass mannequins described on page 77, MODERN PLASTICS, February 1949. For medium size or special pieces, however, metal formers, either male or female, are widely used.

For really large pieces, the Beetle no-pressure process, involving heat only, is effective from a tooling standpoint since no more dimensionally stable mold material can be desired for the tolerances involved than a polyester-glass fiber laminate itself.

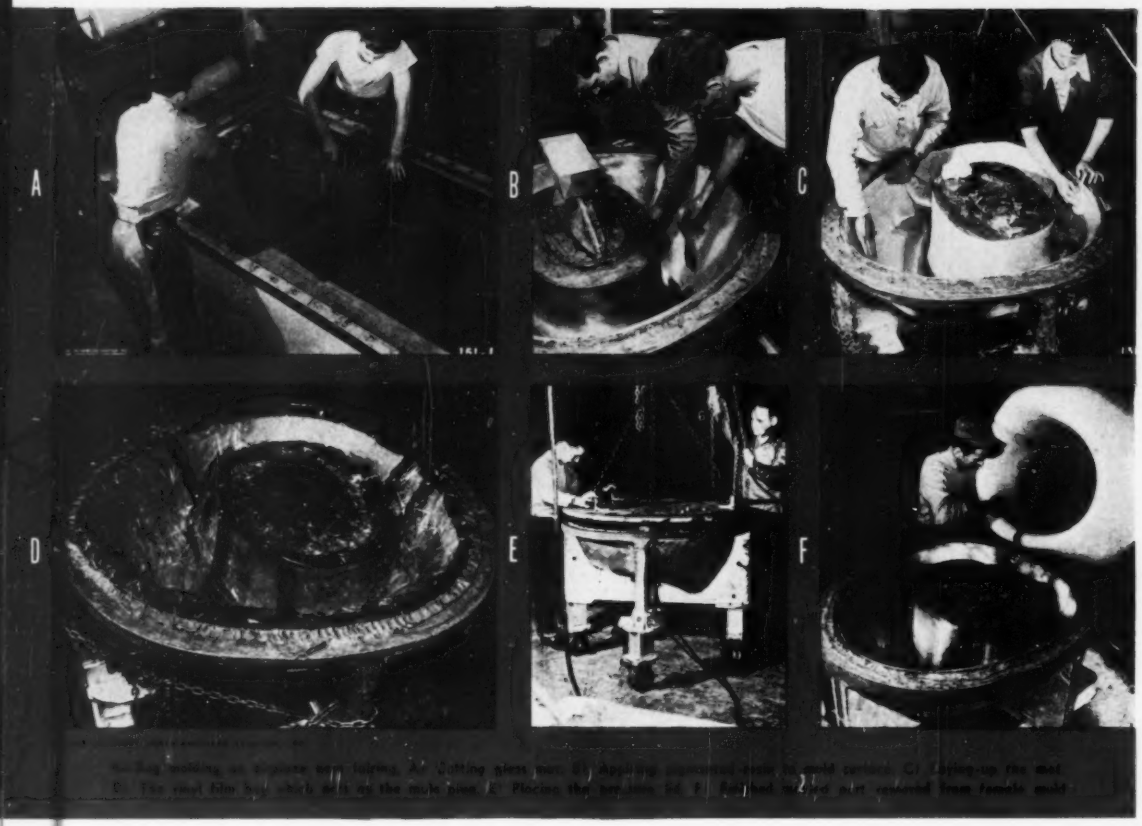
In the Marco method, plaster, wood, concrete or metal male molds, provided with a trough running completely around the bottom, are used. Glass cloth or mat is laid up on the lubricated male to form a matrix of the desired thickness, impregnated with resin and cured at room temperature. This is carefully finished, lubricated, and a rather thin glass-cloth reinforced female mold is made over it in the same manner as the matrix was produced. Mating molds almost 30 ft. in length have been made in this manner quickly and at a fraction of the cost of metal molds of comparable size.

The female mold is then removed and provided with one or more vacuum lines (depending on size) with sight gage inserted at the highest points. The matrix is then put aside and the molds set for use.

In producing the actual boats, the reinforcing mat or cloth is laid up dry on the lubricated male mold. The female is then set in position, self-curing resin poured into the trough so it completely covers the



3—Upper right: Radome molded in aluminum molds. Lower right: Cover produced in heated dies. Left: Knitted glass fabric prevents wrinkling in compound curves



lower lip of the female, and vacuum is applied. As the air is withdrawn from the sealed mold cavity, resin is drawn from the trough into the mold and the pressure of the atmosphere forces the thin female mold into intimate contact with the lay-up beneath. When bubble-free resin appears in the sight gauge, vacuum is cut off and constant pressure is maintained on the mold until cure is complete. No heat is required and the resulting laminate has run-free finish on both sides.

Polyester resin developments

Polyester resins, only two years ago, were relatively incomplete materials. The technical youth of the industry and the limitations of war-born techniques meant that resin formulation was a matter for trial and error on the part of both material supplier and the molder.

Today the polyesters are used at high pressures of well over 1000 p.s.i., at low pressures, and at no pressure. Polyesters are available in all these ranges with a variety of curing temperatures. It is now possible for a molder, after a study of the requirements of the piece, to call for a resin number from any one of the main suppliers and get exactly what he wants.

The first plant-tailored line of resins was the Selectron 5000 series announced by Pittsburgh Plate Glass Co., Pittsburgh, Pa., in October 1947. The standards for this series were based on types of applications.

American Cyanamid Co., New York, N. Y., offers a series of Laminac resins, all of which may be blended to get intermediate properties, the standardization principle being based on the reactivity of the resin and the viscosity. The company lists a new resin that will produce a highly water-resistant laminate, two new high viscosity resins, a resin with high flexing properties, a special resin that will gel quickly for mat molding work, and two rigid, fire-resistant resins.

A resin problem with some moldings is that of getting an immediate gel to prevent shift of resins during cure. Another problem is storage life of some resins at reasonably high temperatures. To meet the former problem, Rohm & Haas Co., Philadelphia,

COURTESY SEARS, ROEBUCK & CO.

5—Mass-produced hobby horses, low pressure molded and finished with baked enamel, will support 200 lb.

Pa., has added a new resin to its Paraplex "P" series.

Marco Chemicals has announced two new resins in its MR series, one of which is a high heat-resistant product declared to reduce cold flow. The second resin can be cured tack-free at room temperature in thin films, as coatings.

The Plaskon Div. of Libbey-Owens-Ford Glass Co., Toledo, Ohio, has an alkyd diallyl phthalate polyester which is specially made for use with glass yarns as in fishing rods, and with fabrics for aircraft parts. It is an exceptionally heavy resin reported to coat well.

The general level of polyester prices has come down in the past few months. Most standard resins are obtainable at around 36½¢ a lb. in carload lots to 51½¢ a lb. in small quantities.

Structural fillers

In general, the cotton fillers are lower in price than they were two years ago. And the non-woven textile filler Lantuck, described on page 70, MODERN PLASTICS, May 1949, has made some strides. For the continuous laminating field, new papers with controlled absorption properties have been introduced. But economic progress in the glass mat field has been pretty spectacular — as well it should be, according to the molders.

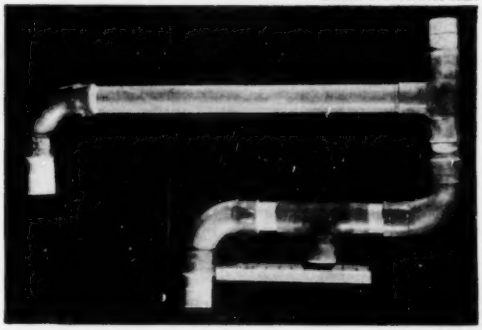
Owens-Corning Fiberglas Corp. and others now offer a variety of glass mat materials in specific fiber sizes, bonded with a variety of polyesters according to the needs of the molded products. These sell at around 55¢ a lb. in quantity.

Figure 9 illustrates part of the machine which offers the latest development in glass fiber filler economics. It is the preform machine built by Turner Machine Co., Inc., Danbury, Conn. The machine was developed from the principle of preforming fur felt for men's hats, and has been adapted to reinforced plastics production. Cut lengths of random glass fiber, costing 39¢ a lb. in carloads, are fed into the picker end of the machine, carried to the opening and distributing point by means of a conveyor apron. It is opened up at this point by means of another picker and a brush which distributes it on a perforated form to which the fibers are drawn and held in place by suction. The suction is obtained by the use of a 28 in. fan rotating at 1800 r.p.m. This fan draws the air and glass fiber down to the preform. The screen form is rotated at approximately 36 r.p.m. to provide even distribution of the glass fiber.

During the forming, a liquid or powdered binder is fed into the fibers. The preform is then removed and placed in an oven, still on its perforated form, and allowed to cure. After curing, the preform is

6—Reinforced plastic pipe and couplings have highest bursting strength-weight ratio of any known material

COURTESY U. S. PLYWOOD CORP.



COURTESY ATLAS PLASTICS, INC.

7—Extremely light antenna pole is molded in sections on steel mandrels; cellophane wrapping supplies pressure

COURTESY ATLAS PLASTICS, INC.

8—Housings for amusement park locomotives, vacuum bag molded, are lighter, lower in cost, than metal shells

removed from the form and pressed into final shape and thickness in matched steel molds at low pressure. Where heavier sections of the preform are required it is a simple matter to make larger holes in the perforated metal form.

The standard preform machine now in use, costing $5300, will form objects approximately 32 in. in base diameter by 34 in. high. Larger preform units can be made available when the industry demands.

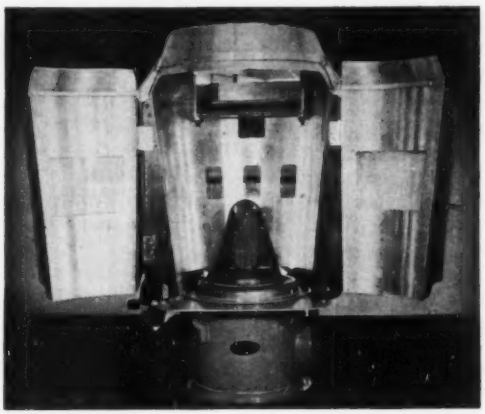
There are several preform binders receiving attention in the field now. Komel urea #1 made by Klever Starch Co., Columbus, Ohio, is a low cost material mixed in water, sprayed on to the fiber, and dried out — not baked, since it requires no heat. Plaskon 920 emulsion is an alkyd resin mixed in water, sprayed, and cured in heat; it provides good electronic and wet strength properties. Interchemical Corp., New York, N. Y., has a series of resins for mat bonding. These are polyesters in solvent solution with peroxide catalysts, sprayed on and cured in heat. Two powder polyesters for mat and preform use are: Laminac PDL-7-463, which is sifted into the air stream with glass fiber and heated to flow the resin; and Atlas Powder Co's. bonding polyester G-362 which is already catalyzed. Vinyon N is a waste vinyl dry fiber which is mixed with the glass at the picker stage. After preforming and under heat, the Vinyon shrinks, holding the glass fibers in place. The choice of binder depends on the shape, thickness, and desired properties of the product, and is quite as important as the choice of resin or selection of fiber size.

It appears possible that, as the business grows, companies may be set up to do nothing but preforming. Waterway Projects, Inc., Los Angeles, Calif., is an organization using a high speed process for treating glass fabrics and fibers for use in the reinforced plastics field.

Inert extenders

A new approach toward reinforced plastics economy has been made possible recently by the use of extremely low cost inert extenders for resins. Not only do these materials help to lower costs, but they can provide smoother surfaces on metal molded pieces by cutting down the shrink of the resin; they can help pigments to do their job of covering fibers; they provide a more opaque product. As for economy, inert extenders for polyester resins cost from 1¢ to 12¢ a lb., depending on their properties and purification.

Each resin has been found to have a different extender tolerance. Too much extender may change the viscosity of the resin or change the flow; too little may give the product a poor appearance. Various quantities, from 15 to 65% of resin, dry and wet, have been used. Selection of resin extender and quantity to be used is still a matter of trial and error. Some of the extenders currently being used in the field are China clay; calcium carbonate called "Surfex" as made by Diamond Alkali Co., in which each particle of extender is coated with resin; Fuller's earth; pulverized mica which provides improved electrical properties; Novacite, made by Malvern Mineral Co., Hot Springs, Ark.; and several silica compounds.



COURTESY TURNER MACHINE CO., INC.

9—At center of preform machine is perforated form on which glass fibers are distributed and binder added

Those who have used extenders state that it is possible to mix them into the resin by agitation but the ideal way would be to use a ball mill. Interchemical has gone to the extent of producing a resin with extender milled into it. Proper wetting of extender by resins is most important to get good flow and even distribution.

A fascinating development and possibly a threatening one from the standpoint of cost of some polyester-glass mat moldings is the new development of polystyrene and copolymer emulsions for the con-

tinuous treatment of glass mat and other fillers. Such treated fillers can be used in a punch press molding operation like die cutting metal, or used as strengthening fillers for large polystyrene injection moldings. Bakelite Corp., New York, N. Y., Monsanto Chemical Co., Plastics Div., Springfield, Mass., and The Dow Chemical Co., Midland, Mich., are now offering polystyrene emulsions for this purpose, and Mathieson Chemical Corp., New York, N. Y., has a polydichlorostyrene emulsion.

There is the further possibility of wet preforming of slurries of fillers and emulsions — which could provide a very low cost product indeed.

Finishing reinforced plastics

One of the difficulties with glass mat up to the present has been that it shows through the resin, producing a random design on the molded surface which may not be acceptable. Of course, coatings applied after molding are fairly widely used, but a main desire of the industry is to produce reasonably opaque mold-finished surfaces.

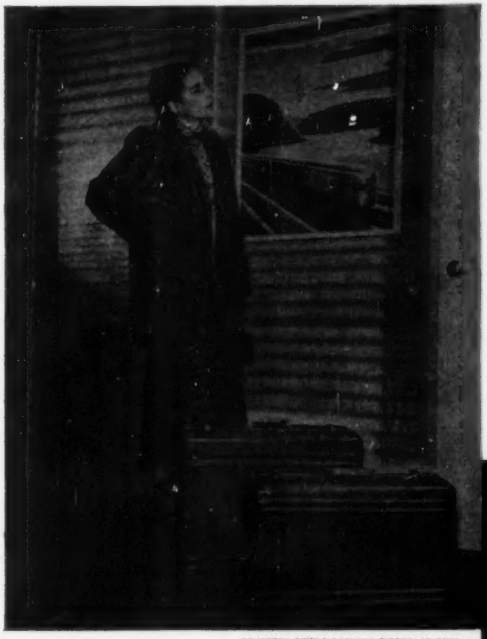
One method is to spray the female mold with a pigmented and possibly filled resin that will gel quickly, then laying the mat or preform on this. Such resins are low in viscosity and some of them may be sprayed on a hot mold to produce a quick gel. Figure 4B shows a pigmented resin coating being applied to the mold prior to fabric lay-up.

Another method of producing a smooth, uniform, and fine finish is to mold a thin layer of super-fine glass mat on the outside of the molding. This extra layer is bonded with the same resin used in the base structural filler. Such a finish mat is made by Glass Fibers Inc., Waterville, Ohio, which company also makes cut fibers for preforming. Riegel Paper Corp., New York, N. Y., now offers papers which may also be used in this way for finishing; they are still limited as to draw, but can be tailored to fit and are stated to absorb and hold the resins well.

Polyfax is a new process of Finishes Div., Interchemical Corp., Newark, N. J., which permits authentic reproduction of wood grain, fabric weave, or leather on products of metal, wood, and both reinforced and unreinforced plastics. The method involves the use of a soft composition transfer roll which carries inks from an etched plate and puts them on the plastic product over a ground coat of the proper color value. Naturally, the surface of the reinforced molding must be dense to accept this.

In some cases, such as the luggage in Fig. 10, made by H. Koch & Sons, San Francisco, Calif., the public or the industrial customer may accept the glass mat finish for its own beauty. The particular piece referred to is produced with gray pigment and with the white glass fibers showing through produces a completely new and beautiful effect.

Pigments have always been more or less of a problem in the polyesters and several pigment manufacturers have given this matter attention lately. The Calco Chemical Div. of American Cyanamid Co., Bound Brook, N. J., has just revised all its specifications on color for polyesters and is now producing nine pastes carried in a non-volatile vehicle compatible with Laminac and other resins. These color pastes don't need to be milled with the



COURTESY OWENS-CORNING FIBERGLAS CORP.

10—Reinforced plastic luggage is scuff, scratch, and dirt resistant, mildew-proof, washable, light in weight

COURTESY WESTERN PRODUCTS, INC.

11—Postformable polyester-paper laminate made possible the one-piece work surface of this 12-ft. sink

resins but may be mixed in at the same time as the catalyst is added.

S.P.I. material standards coming

Not the least important element in this developing picture of improved markets for reinforced polyesters is the Standardization Committee of the Reinforced Plastics Div. of S.P.I. Chairman of the committee is Leonard S. Meyer, Western Products, Inc. Member for resins is D. G. Patterson, head of the Plastics Laboratories of American Cyanamid Co. Dealing with cellulose, asbestos, and paper fillers is W. B. Darling, Riegel Paper Corp. On glass fillers of all kinds is Clare E. Bacon, Product Development Laboratories, Owens-Corning Fiberglas Corp. Representatives for cotton fillers and for catalysts are being added and the committee is agreed that where possible A.S.T.M. methods will be used for existing purposes and to develop needed new tests.

Economics—and markets

The foregoing discussion of production methods has referred to some specific reinforced plastics and products. Since competition of these products in various markets is based on their ability to perform better or at lower use cost than products made of steel and other metals, wood, leather, glass, etc., and since (appearance being equal) strength-weight ratio is a key to this competition, each case must stand on its own feet.

The Purity Bakeries tray made by Molded Resin Fiber Co., weighs 2 lb. less than the wooden tray it replaced. It can be steam cleaned if necessary. It offers greater load capacity since by using a ⅛-in. side wall instead of a 1-in. thick frame, each tray has 72 sq. in. more load space. Because the plastic tray's over-all height is 1⅛ in. as compared to 2-in. in wood with the same inside depth, an extra layer of shelves can be provided for in delivery trucks, increasing load space by more than 50 sq. ft. per ½-ton truck. While the plastic trays have not been in use long enough to determine their final durability, their properties should give them a long and reasonably repair-free life, and handlers will certainly not be bothered by nails, screws, or splinters. Due to the weight-eliminating design of the reinforced plastic tray, its cost is only 17% more than that of the wood tray.

The flat chemical drying tray made by Laminated Plastics, Inc., used to carry powders through a drying oven, weighs 5 lb. and has a factory price of $4 to $5.50 depending on quantity. Tool cost was $650. Comparable stainless steel trays cost $10 to $15; porcelain and enamel $5 to $6; glass panel bases with wooden frames $4.50. The stainless steel compares favorably in service with plastic but lacks as good resistance to some chemicals and weighs three times as much. Porcelain enamel is easily damaged and when damaged must be discarded. Glass panels are easily broken and the wooden frame must be frequently replaced at a cost of $2. On service economics alone the plastic tray is most acceptable.

And the tray business is going to be big! One large bakery has under development a program involving initial production of over a half million trays and an annual replacement of 50,000. There are 10 or 12 molders now making trays and tote boxes on a production basis.

The economics of the Apex washing machine parts described on page 126, MODERN PLASTICS, July 1949, have not been exposed. But it is a matter of a reinforced plastic competing with aluminum or enameled steel. Finished enameled steel today costs better than 20¢ a pound. Four lb. of steel may be compared, on a strength-weight basis, with 1 lb. of this plastic, and the plastic, using preforms and inert fillers with lower costs, will come through at about 75¢ per lb. for long run jobs. The use of reinforced plastics by Apex was not, however, decided on cost alone. Chemical and physical resistances of the material were involved.

In the aircraft field, Zenith Plastics Co., Gardena, Calif., is now producing laminated window frames for DC-6 and Convair 240 airliners which are 25% lighter than aluminum—and in airplanes weight costs money. Zenith is also making housings and displays out of reinforced plastics.

The spectacular economics of the Beetle boat were described in our last issue. Other boats show similar market possibilities based on this important element of cost.

12—Super-thin continuous laminates are economical as table top materials. They are applied to grainless base

COURTESY WESTERN PRODUCTS, INC.

The future for molded reinforced plastics

At every size level and at almost every length of production run the reinforced plastics are now competing with many non-plastics materials. In the small unit field where matched metal dies are used, more washing machine parts, dish washer parts, and refrigerator parts may be expected because here the

(*Please turn to page* 158)

Tongue and groove joint holds two halves of acetate housing. Fan blows air over block of deodorizer material

Electric deodorizer with flame-resistant cellulose acetate housing accomplishes deodorization by dry vaporization

Deodorizer Dressed Up in Acetate

FLAME-resistant cellulose acetate is being used to mold a decorative housing for an electric deodorizer, said to be the first commercially available unit of its type to be approved by the Underwriters' Laboratories. Manufactured by Y & Y Deodorizer Co., Philadelphia, Pa., the unit operates on the principle of deodorization by dry vaporization as compared with the liquid drip method employed in more conventional units.

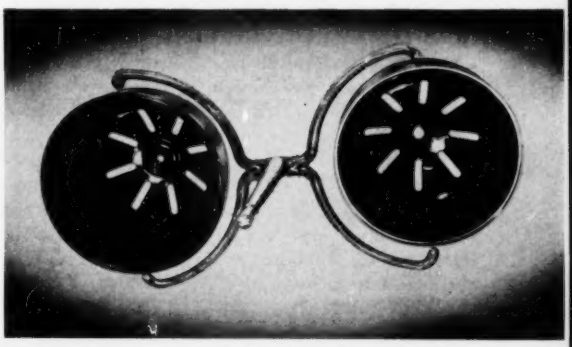
The streamlined housing, which is produced of ivory-color Hercules cellulose acetate, was originally designed to be molded in two identical halves. However, difficulty was encountered in eliminating distortion and obtaining an unobtrusive joint. The molds were then remachined to include a center band and a tongue and groove joint. The altered halves are now molded on a two-cavity injection machine, on a 1½-min. cycle, in a stripper type mold with pin-point gating. The particular type of acetate used was selected for its rich color, strength, and heat and flame resistant properties.

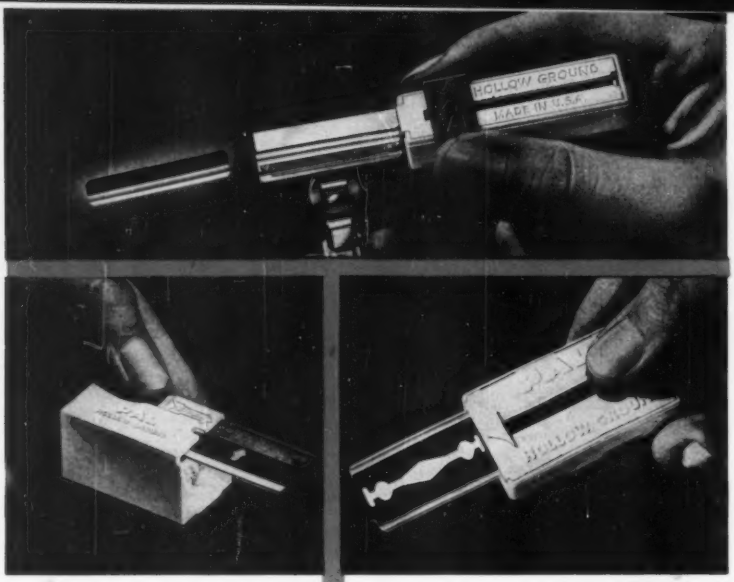
The entire weight of the working parts of the unit is supported by the metal mounting bracket. This bracket is attached to four bushings in the housing.

Dry vaporization is accomplished in the deodorizer by blowing air over a block of material impregnated with a compound reported to first neutralize disagreeable odors and then provide an agreeable scent.

At present the deodorizers are supplied and serviced on a monthly rental bases. Well adapted for use anywhere such units might prove desirable, they have been installed in public buildings of all types, rest rooms, beauty parlors, etc. Various scents are available — among them, jasmine and heather. Ultimately Y & Y Deodorizer Co. plans to offer a choice of at least 20 different scents to customers.

Shot of two-part housing which is injection molded on a 1½-min. cycle in a two-cavity mold with pin-point gating





How the new plastic razor blade packages work. Top: The injector blade dispenser molded of ethyl cellulose and polystyrene. Bottom left: The polystyrene single edge container. Bottom right: The double edge package of polystyrene

Blade Sales Zoom

SOME two years ago, one of the country's leading razor blade manufacturers started packaging his products in molded plastic dispensers. As a result, blade sales increased far beyond expectations and a new blade marketing trend[1] was started. Today, this trend has so firmly manifested itself that every blade manufacturer is either using plastic dispensers or is investigating their possibilities in the light of current merchandising successes.

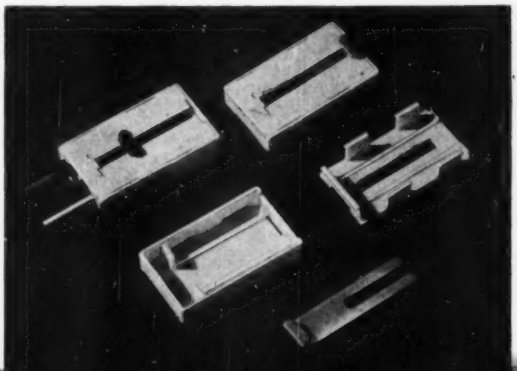
A molded plastic dispenser provides the consumer with a convenient, sturdy, easy-to-use package. Furthermore, blade edges retain their original keenness until used because they are not touched by any packaging material.

The latest to join the ranks of those using plastic dispensers is the Pal Blade Co., Inc., New York, N. Y. The Pal dispensers, known as Zipaks, contain oiled, unwrapped blades. After the blades have been used, the containers are thrown away.

The company uses two different size packages for both double and single edge blades and a third type of package for injector blades. All packages are produced with tradenames molded-in. The injector blade package is an innovation in this field and the company hopes to make big inroads into the injector blade market with it.

The injector blade dispenser, molded by the Plastics Div., General Electric Co., Pittsfield, Mass., consists of three pieces: the top or dispenser housing, the bottom with the blade guide, and the blade pusher. Dow's Ethocel ethyl cellulose is used as the molding material for the bottom part and was selected because of its strength, dimensional stability, and resiliency. The top and the pusher are molded of polystyrene, chosen for its low molding cost and dimensional stability. One mold is employed for the top and one for the bottom; each mold has 16 cavities. A separate mold is used for the pushers. Tolerances are held to plus or minus 0.002 inch. The dispenser contains either 6, 10, or 20 blades that can be used with any standard injector razor.

Top row: Left, assembled double edge razor blade package with pusher out; right, package with pusher in. Middle row: Left, inside base; right, inside top. Bottom: Pusher



[1] See "Razor Blades Housed in Plastics," MODERN PLASTICS 25, 103, (Dec. 1947) and "Polystyrene Razor Blade Dispensers," MODERN PLASTICS 26, 85, (Jan. 1949).

The double edge blade packages, which also consist of three parts, are molded of Styron polystyrene by Commonwealth Plastics Corp., Leominster, Mass. Commonwealth uses six 32-cavity molds, built and engineered by Standard Tool Co., Leominster, Mass. One double edge blade dispenser holds either 10 or 21 blades; the second holds 44 blades. Commonwealth molds the tops, bottoms, and pushers for both sizes. The production cycle ranges from 30 to 60 sec. depending upon the die in use. In certain critical locations, tolerances are held within 0.002 in. since the blade to be ejected has a thickness of only 0.006 in. and it is necessary to prevent the ejection of more than one blade at a time.

One of the two-piece single blade packages holds 10 blades; the other 21 blades. The latter unit is also used to hold 22 blades and two of these units comprise Pal's 44-blade package. The bases for the single edge dispensers are identical; only the tops or blade compartments differ in size. The molder, Perry Plastics, Inc., Erie, Pa., has a 16-cavity mold for the top of the 21-blade dispenser, a 20-cavity mold for the top of the 10-blade dispenser, and a 24-cavity mold for the bases. Molds were also built by Perry. The production cycle is approximately 35 sec. on the 16-cavity mold, 33 sec. on the 20-cavity mold, and 30 sec. on the 24-cavity mold. Tolerances average around plus 0.004 inches minus zero.

Tied-in with the Pal Zipak are dispensers produced for the Personna Blade Co., Inc., a Pal-owned firm. The Personna dispensers are identical in size, shape, and material with the Pal dispensers. The tops of the Personna packages have the word "Personna" molded-in instead of Pal tradename. The same companies who mold the Pal packages also mold the Personna dispensers. Perry Plastics produces the Personna top in an extra set of cavities using the same set of force plugs which produce the Pal tops. Aside from the molded-in name, the main difference between the two finished dispensers is the color of their tops. The different size Pal Zipaks are differentiated by the colors of the bases.

All component parts of the containers are shipped to Pal's Plattsburg, N. Y. factory. Here the stacks of blades are automatically fed into the containers and held by a steel spring, the only non-plastic part of the container. Assembly of tops and bottoms is by snap fit. Each container is packed in a folding box.

Currently, U. S. razor blade sales average about $80,000,000 a year, and injector blades account for approximately $10,000,000 of that. Pal, it is reported, runs second in sales in the double and single edge fields and is trying to capture the lion's share of the injector market, which heretofore has been dominated by one company.

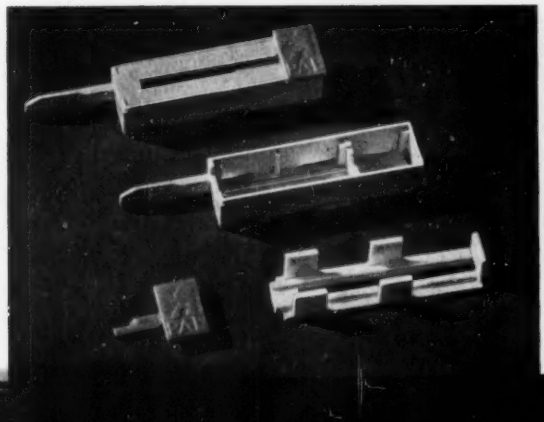
—*in Plastics*

New trend in razor blade packaging now firmly established by merchandising success of molded dispensers

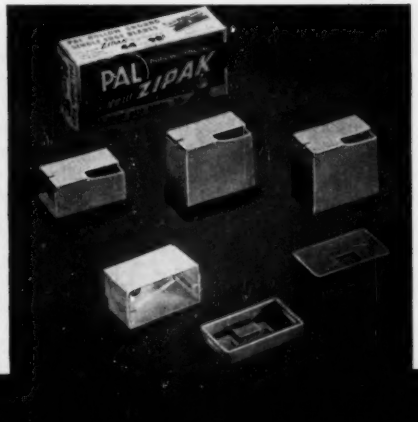
The introduction of the new Zipaks involves Pal's first television effort. Its advertising campaign, by far the largest in the company's history, includes an expanded magazine promotion.

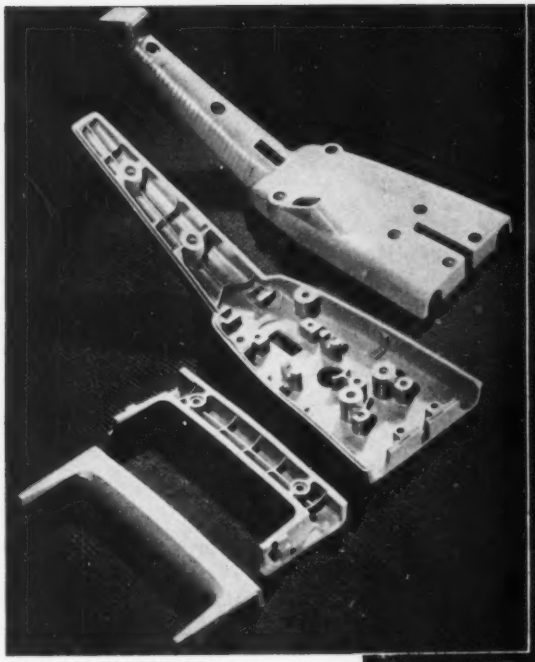
Today, although supply has not yet caught up with demand for Zipaks, Pal's dollar sales on the new item are way ahead of last year's total sales. Chain stores have placed covering orders for the promotion and have run cooperative newspaper ads. Pal reports that all of the dispensers will be available by this fall in practically all major chains in the country, promoted with window displays and counter cards.

Top: Assembled injector blade package. Middle: Inside of base, showing blade compartment. Bottom row: Left, the decorated blade pusher; right, inside of top of housing, showing the pusher track



Single edge dispensers contain 10 or 21 razor blades. At bottom, from left to right: Inside of housing, inside of base, bottom of base. No blade pusher is used





PHOTOS COURTESY TENNESSEE EASTMAN CORP.

Singer vacuum cleaner has butyrate handles, elastomeric vinyl bumpers, phenolic wheels. Handles (above) are molded in two halves with internal ribs for added strength. The larger handle serves as housing for cord reel, electric switch, and a control lever

Vacuum Cleaners Use More Plastics

FOR colorful, attractive, strong parts which are economical to manufacture, vacuum cleaners, like other electrical appliances, are now using more plastics than ever before. Two excellent examples of the manner in which plastics are used in vacuum cleaners are the new Singer and Eureka upright cleaners.

The most interesting application in the Singer cleaner is the handle, which also serves as a housing for the cord reel, the electric control switch, and the lever which locks the handle in position. Dark gray Tenite II cellulose acetate butyrate is the material used for this handle and for a smaller carrying handle lower down on the machine. Each handle is molded in two halves with numerous internal ribs for added strength.

The lens cover bumper and the chassis bumper on the Singer cleaner are injection molded of gray elastomeric Vinylite resin. Color, economy of manufacture, and the non-marking qualities of the material dictated the choice of vinyl.

The wheels are molded of a wood flour and graphite-filled phenolic compound. A general purpose phenolic material is used for the cord reel contact strip, slip rings, motor brush caps, and the motor lead connecting plug. All plastic parts used in the Singer are molded by Diehl Mfg. Co., Finderne, N. J., a division of Singer Sewing Machine Co., New York, N. Y.

Five different plastic materials — phenolic, cellulose acetate, vinyl, acrylic, and ethyl cellulose — are used in the upright vacuum cleaner which is

made by Eureka Williams Corp., Bloomington, Ill.

The motor hood, molded of flame resistant acetate, is the largest single piece of plastic in the Eureka cleaner. The plastic piece is light in weight, chip-proof, colorful and can be produced more quickly and more economically in acetate than metal. Ventilating slots are molded into the hood piece to help dissipate the heat of the motor.

A molded acrylic headlight lens and a name plate, also molded of acrylic, are attached to the front of the motor hood. The two pieces are held in place by a brown acetate frame which is bolted to the light tan hood. The name "Eureka" is molded into the rear surface of the transparent name plate, and the depressed letters are filled with a dark paint. Thus the front surface of the name plate is smooth and easy to keep clean.

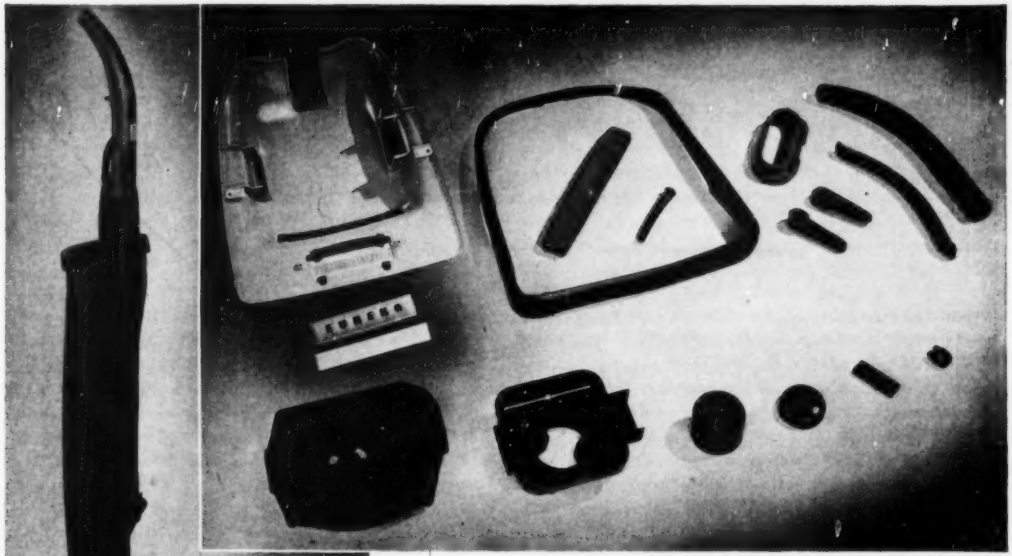
A one-piece elastomeric vinyl bumper encircles the lower part of the motor enclosure. The bag clip cover and cord strain relief are also molded of elastomeric vinyl.

Ethyl cellulose is used to mold the cord clips and the matching handle grip. The bag adapter (which joins the dust bag to the housing) and the cord clamp, (which keeps the cord from unwinding when the cleaner is not in use) are molded of cellulose acetate.

A shock-resistant phenolic material is used to mold the two-part motor housing. The material was selected because of its heat resistance, dimensional stability, insulating qualities, and strength. All ribs, bosses, and holes needed for mounting the motor are molded into the casing. Phenolic is also used for the wheels on which the vacuum cleaner rides, and for the handle slide.

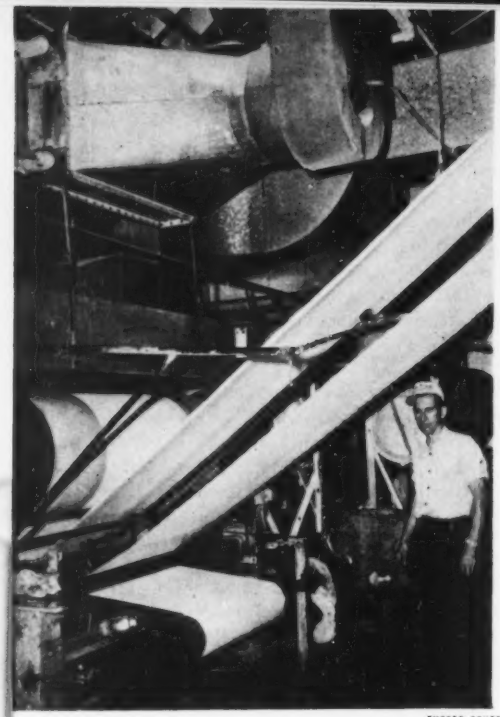
Seven molders supply parts

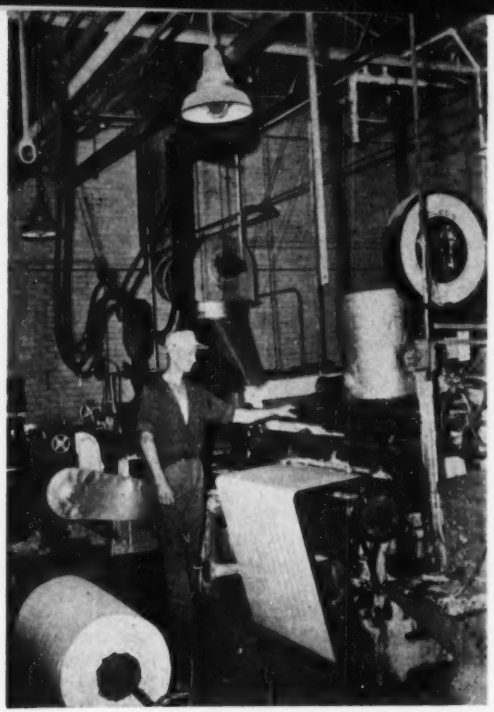
Seven different custom molders supply plastic parts for the Eureka upright. Amos Molded Plastics, Edinburg, Ind., molds the motor hood, lens, name plate, handle grip, and all the elastomeric vinyl parts. Kurz-Kasch, Inc., Dayton, Ohio, molds the phenolic motor casing. Taylor Mfg. Co., Milwaukee, Wis., supplies the wheels. American Insulator Corp., New Freedom, Pa., molds the acetate cord clamps. The handle slide is molded by Continental Can Co., Inc., Cambridge, Ohio, and the cord clip by Auburn Button Works, Inc., Auburn, N. Y. The bag adapter is molded by Franklin Plastics Div., Robinson Industries, Inc., Franklin, Pa.



Plastic parts of Eureka cleaner include: motor hood (top left), name plate, headlight lens, furniture guard, bag clip cover and cord strain relief inside furniture guard), bag adapter, cord clips, two-part handle, upper and lower motor casings (lower left), two wheels, handle slide, and cord clamp

Flame resistant acetate motor hood gives Eureka cleaner an attractive modern appearance. Molded-in ventilating slots allow the heat of motor to escape





PHOTOS COURTESY LANDERS CORP.

In unusual take-up method, coated fabric goes up over a cooling drum (not shown), then comes back and is wound on roll at bottom

Fabric goes from feed roll (left) under platform, into knife coater. Vinyl from kettle (left of scale) flows into dam in front of the knife

What's New in Vinyl Spread Coating?

New techniques for spread coating are aimed at increased speed, better control of caliper, and improved surfaces

SPREAD coating of fabric with vinyl is currently an art rather than a science. Whether or not it will ever progress to the point of an exact science is still doubtful. Every operator uses a variety of gadgets and materials with which he alters standard equipment and compounds to meet his own needs. As in all arts, experience is probably the most valuable commodity in the fabric coating industry. Nearly all methods and equipment are based on those used in the pyroxylin, rubber, and paper coating fields, but as processors gain experience they are drifting farther and farther away from older methods and are treating vinyl as a new and different material that responds nicely to new techniques.

Dip coating

Basically there are three methods of spread coating vinyls: dip, knife, and roll. Dip coating is the simplest of the methods. The John Waldron Corp., New Brunswick, N. J., describes a dip coater as consisting of a lead-in roll (Sketch 1), an immersion roll, and a pan that contains the coating material. If the web is to be coated on only one side, the coating material in the pan is maintained at level B by means of an overflow. When two sides are to be coated, the material level is raised to A so that the immersion roll is fully covered.

Such a coating machine is inexpensive to build but expensive to operate because the coating must flow freely and therefore must contain a low solid content. This means that solvent must be used in excessive quantities. The method does not produce uniform coating because it is subject to two vari-

No. 4 of a series on vinyl film, sheet, and coatings

ables—varying porosity and thickness of the web and the varying viscosity of the coating caused by climatic changes or evaporation and separation of the coating material in the pan. This method is seldom used in coating vinyl on fabric because the interstices in the fabric are not properly filled. On the other hand, it is a first rate method for coating plastisol on a smooth surface such as paper.

Knife coating

Several types of knife coaters are shown in Sketch 2. The type at A is frequently called a floating knife coater. The coating material is applied on the face of the web, in front of the knife. Dams or end plates prevent the coating material from spreading laterally. This, or a slight variation, is probably the most commonly used type of coating head in the industry. Since the knife is supported only by the web, the coater is unable to handle low strength materials; also, tension of the web is difficult to control. The thickness and quality of the applied coating is controlled by the angle of the knife, the width of the smoothing edge on the knife, and the tension of the roll.

The coater shown at B, Sketch 2, is sometimes known as a rubber spreader because it is commonly used to coat cloth with rubber using a small amount of solvent. The viscosity of the coating and the plastometer or resilience of the rubber backing roll (which is really only a ½-in. coating of rubber on steel) should be properly proportioned so that the rubber roll is always under pressure in order to obtain uniform knife pressure on the web.

At C, Sketch 2, is shown a coater in which the web to be coated is supported by a rubber belt, taking most of the tension off the web. The three rolls support and align the belt. This type coater is particularly recommended for obtaining a uniform coating since the rubber blanket supports the web against the knife. This pressure can be pre-set and adjusted during operation without changing the tension of the web. If further refinement is desired, a smoothing or metering bar may be used similar to that shown in A, Sketch 2. No tension rolls are necessary for this coater. The cloth is conveyed straight from the fabric roll which is controlled by a brake, in contrast to other coating heads where the fabric is often threaded under and over anywhere from two to six rolls in order to obtain the proper degree of wrap and snubbing. The rubber-blanket coater is especially adaptable for plastisols and organosols, and a speed of coating as high as 200 ft. a min. on lightweight fabric has been claimed for it.

The above described coaters are Waldron machines. Another manufacturer, Meadows Machine Works, South Kearney, N. J., produces a coater with two floating knife spreaders set in tandem and designed to provide uniform coating. The knives are mounted on iron frames and the material is fed from the let-off or fabric roll which is controlled by a friction brake to obtain the proper web tension. The second, or back, knife is a smoothing knife, particularly helpful in removing streaks, and generally the contour of its smoothing edge is the same as that of the front knife. The machine has been used to coat most any fabric, from lightweight, open weave materials to the heaviest duck.

Another coater by Meadows is a Combination rubber roll fixed-knife floating knife head which combines the necessary equipment for fixed knife rubber roll coating or floating knife coating. If floating knife coating is desired, the rubber roll can be by-passed and the fixed knife swung aside. The

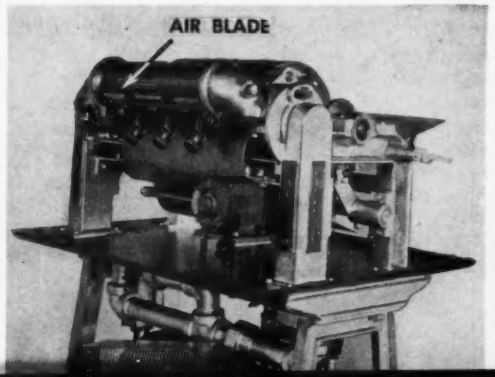
Coating Volume

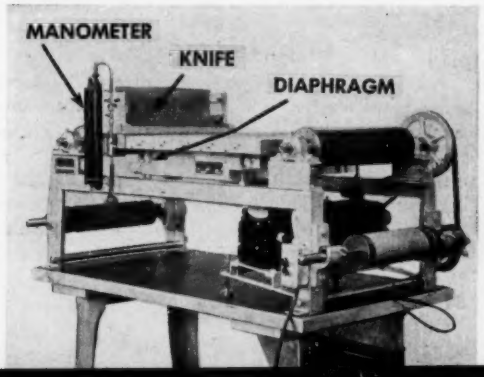
A quick estimate of the importance of vinyl-coating to the plastics industry is gleaned from the fact that about 35,000,000 lb. of vinyl compound were consumed for fabric coating in 1948. Of this, it is estimated that nearly 25% was spread coated by the processes discussed in the accompanying article.

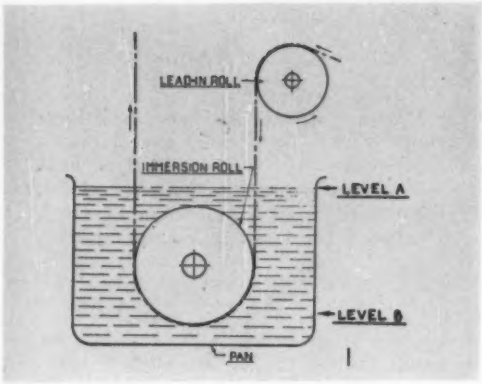
Air knife coater has high velocity air jet blown against web at an angle to strip off surplus coating (see Sketch 3)

New type coater has knife floating on rubber diaphragm controlled by air pressure instead of usual rubber blanket

PHOTOS COURTESY JOHN WALDRON CORP.







ALL SKETCHES COURTESY JOHN WALDRON CORP.

Sketch 1—Dip coater. Material in pan is kept at level B to coat only one side of web, raised to A to coat both

rubber roll and fixed knife used together give the advantage that the fabric has a firm support and thicker coats can be applied. At the point of contact, there is no tension on the cloth, and the coating compound is metered on by the knife. When coating with this knife-roll section of the head, the back knife can be used to eliminate any possible streaks when heavy goods are being coated. Both of the Meadows machines are particularly recommended by the manufacturer for organosol and plastisol coating.

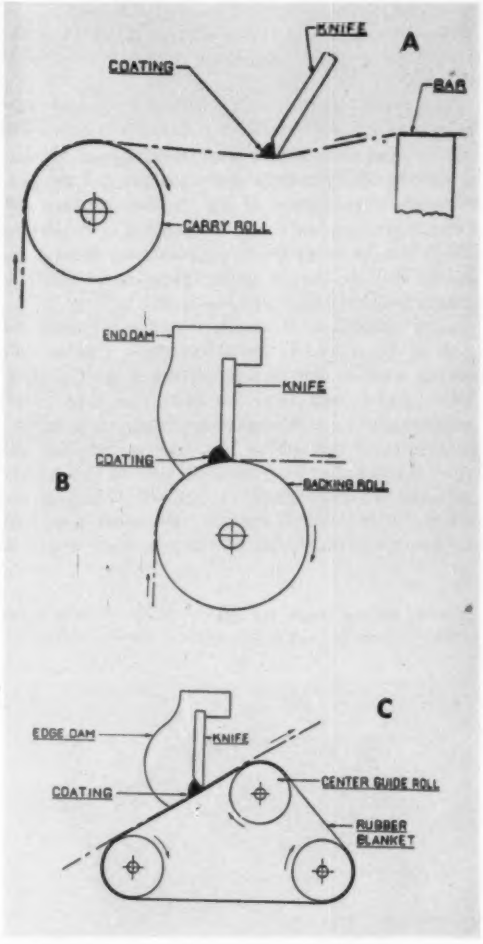
The design of the knife in spread coating heads is of great importance since its shape, plus the pressure on the fabric, determine the thickness of the applied coating. The pressure is controlled by screwing down the head, but the radius of the knife, which is the distance from front to back of the cutting or smoothing edge and the degree of the upward curve from front to back, is determined by the type of coating desired. The knife varies in width from 1/16 to 3/4 in. and the greater the radius, the heavier the coating. Rounded edge blades simply smooth the surface of the coating but hold nothing back. Sometimes when a particle sticks to the edge of the blade, streaks or "spitting" will show on the surface. To avoid this trouble, specially designed knives, which have a right angle cut to the radius of the knife have been designed.

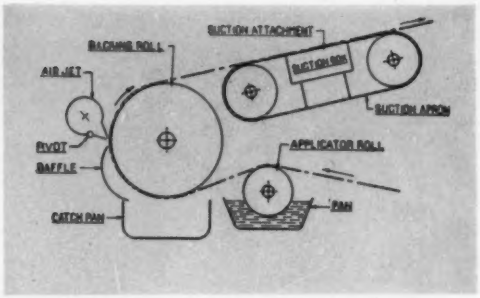
Air jet used as knife

A different type of knife adapted from the paper industry is used in the Microjet air knife coater shown in Sketch 3. Here the web picks up an excess of the coating material from the applicator roll immersed in the pan. The web then passes around a backing roll where the high velocity jet of air, blown against the web at an angle, strips off the surplus coating. The coating is applied in a regulated excess by means of a reversible variable speed drive on the coating roll. The slotted nose of the nozzle may be positioned for distance from the backing roll and angularity of the nozzle. The minimum weight of coating depends on absorbency of the fabric since the air blade is capable of doctoring off the major portion of the applied coating.

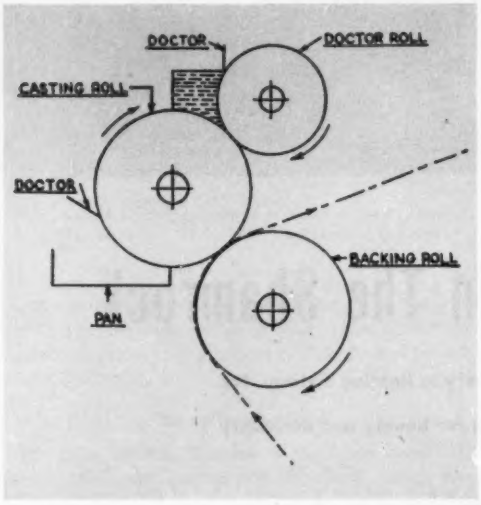
The air knife coater can handle a wide range of viscosities and its simplicity of operation results in low operating costs and permits the use of inexperienced operating personnel. It has shown particularly good results with water dispersions and on textiles that have extreme contours. This type of coater has no mechanical limitations in respect to speed other than those of the machine itself; the rate of drying

Sketch 2—Knife coaters with floating knife (A), rubber backing roll (B), and web supported by a rubber belt (C)





Sketch 3—Air knife coater. Web picks up an excess of the coating material, which is then blown off by air jet



Sketch 4—Reverse roll coater. Coating is metered between doctor roll and casting roll, then cast on the web

is the only other factor which limits its rate of production.

Roll coating

There are many types of roll coaters, but they are seldom used for coating fabric. For paper coating, a roll coater is essential since a floating knife spreader requires a somewhat stronger web than is generally found in paper. Manufacturers claim that roll coating on fabric gives a more even surface and is more likely to fill up the hills and valleys in a piece of fabric so that caliper thickness will be more uniform. On the other hand, processors claim that the knife coating process is less costly and also fills up the interstices in certain types of fabrics better than a roll coater. They also claim that even though a more excellent surface could be obtained by roll coating, such excellence is seldom necessary because the coated material is generally embossed afterwards, tending to minimize minor surface defects.

However, the machinery manufacturers are convinced that roll coating will gradually become more acceptable in high grade precision coating of fabrics, especially lightweight fabric, and are eager to exploit its possibilities.

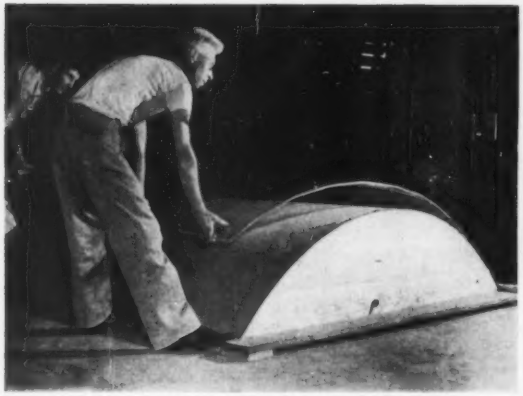
Basically, a roll coater is a series of steel and rubber coated rollers so integrated that one of them will revolve in a pan of coating material, while the others combine to pick up the gunk from the pan roller and distribute it in an even coating on the fabric by means of roller pressure. Of the roll coaters, the reverse roll coater is the most flexible. As shown in Sketch 4, the coating is metered between the doctor roll and the casting roll and is then cast onto the surface of the web as the web is pressed against the face of the casting roll by the resilient backing roll. The thickness of the coating is governed either by the opening between the doctor and casting rolls or by changing the speed of the casting and doctor rolls in relation to the web speed. The greater the speed differential between the web and the casting roll, the greater the amount of coating that will be cast on the web.

The doctor roll is mounted on micrometrically adjustable bearing blocks to permit accurate adjustment during the coating operation. The rubber

(*Continued on page* 162)

Typical knife coater with feed roll at bottom. Compound from kettle is fed by hand into the dam ahead of knife

COURTESY THE GLENN L. MARTIN CO. AND L. E. CARPENTER & CO.



PHOTOS COURTESY SOUTHWESTERN PLASTICS

Acrylic sheet for Emerald Room corner is curved to 6-ft. radius on wooden mold. Sheet measures 88 by 88 by ½ in.

Edges of curved transparent sheet are highly polished so it can be efficiently edge-lighted. Back is sand-blasted

Acrylic and Vinyl in The Shamrock

Famous new luxury hotel uses acrylic lighting fixtures for special effects and vinyl flooring for beauty and durability

THE Shamrock is only a few months old but it is already world-famous and Houston proudly claims that it is "the world's most luxurious hotel." Its builders had a wide range of materials to choose from and sufficient capital to get the materials they wanted. It is therefore significant to note some of the applications for which the architects and interior decorators turned to plastics to secure the durability and richness of appearance they wanted.

Emerald Room fixtures

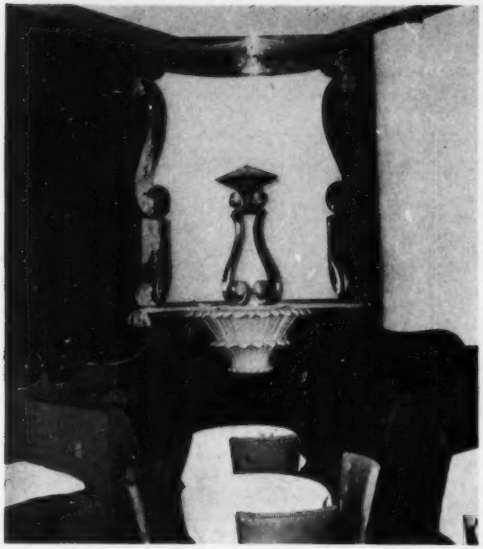
The largest of the public rooms in The Shamrock is the Emerald Room, which serves as the hotel's main ballroom. The room is 103 ft. square and can seat 1000 people at a banquet or accommodate 1500 dancers. In each of the four corners of the room, there is an "emerald" 24 in. wide and 17 in. high fabricated of green Plexiglas. Strickley & Co., Los Angeles, Calif., fabricated the four emeralds.

Each emerald is lighted from below, and is placed two feet in front of a brilliantly-lighted acrylic corner. Each of these corners is an 88 by 88 in. sheet of ½-in. thick Plexiglas which has been curved to a 6-ft. radius. The rear sides of the curved transparent sheets are sandblasted and the edges are highly polished by hand. Cold cathode lights are then mounted on the four edges of each sheet. The result is a brilliant white light near the edges fading to a gray in the center of the sheet behind the emerald. Southwestern Plastics, Houston, Texas, fabricated the corner sheets by heating the sheets to 320° F., then forming them on a wooden mold.

The central lighting fixture in the Emerald Room is made of acrylic, and the railings around the room are edge-lighted Plexiglas. The steps in the room have lighted acrylic panels, most of which have complex curves in them. There are 60 such panels in the steps in this room and the Shamrock Room, and no two of the panels are alike. Each panel had to be formed in a separate mold.

Shamrock Room fixtures

The Shamrock Room, a night club and hotel dining room, has unusual light fixtures fabricated by Southwestern Plastics. The fixtures are made up of 14-ft. long curved acrylic rods which are edge-lighted so that they glow along their entire length.



COURTESY SOUTHWESTERN PLASTICS

Curved acrylic sheet serves as background for "emerald" (upper center), 24 by 17 in., fabricated of green acrylic

There are 19 such rods in each fixture and there is one fixture in each corner of the room. The rods are fabricated by being heated to 320° F. and placed on wooden forms.

Acrylic clouds

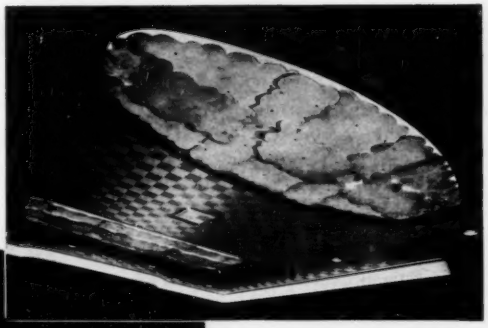
The main lighting fixtures in the lobby consist of back-lighted vari-shaped acrylic sheets which are overlapped and set at different levels to give the effect of a cloud formation. There are three such fixtures in the lobby.

Strickley & Co. fabricated the acrylic sheets, which have a rustic brown paint sprayed on their top surfaces. A close-up view of one of the fixtures is shown on this page. One of the cloud formations is also visible at left in the general view of the lobby at the bottom of this page.

Vinyl flooring

Vinyl flooring is used extensively in The Shamrock in rooms and hallways where the floors are expected to get heavy wear. All the vinyl flooring used was supplied by Goodyear Tire & Rubber Co.

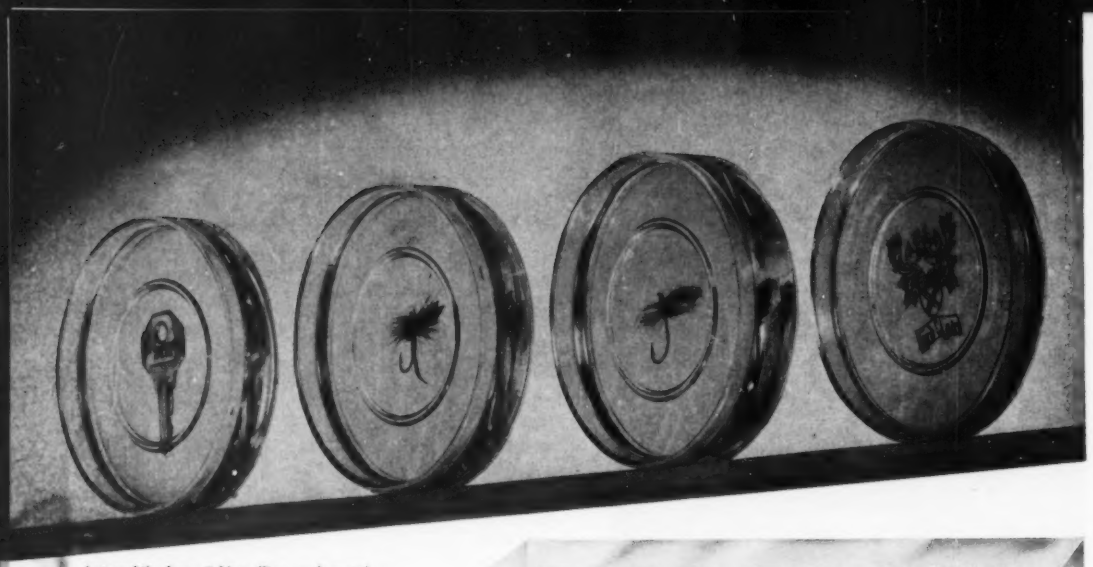
Vinyl floors are used: in the entrance hall (shown in the photograph at the bottom of this page); under the carpet in the lobby and first floor promenades; under the carpet in the Grecian Room, a banquet room; in the Cork Club, a private club; in the pharmacy; under the carpet in a portion of the third floor hall which leads to offices. Perhaps the most significant use of this flooring, however, is in the halls leading to the private dining rooms and in the four dining rooms themselves.



Each of the three main lighting fixtures in lobby consists of a "cloud formation" made of acrylic sheets set at different levels and back-lighted. The top of each sheet is sprayed with brown paint

PHOTOS COURTESY THE SHAMROCK

Main entrance hall of The Shamrock has vinyl flooring. Lobby (left) has vinyl flooring under the carpet. Note acrylic "cloud formation" fixture in the lobby



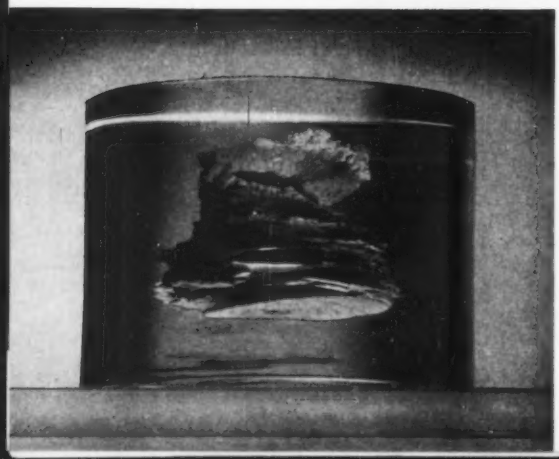
Automobile key, fishing flies, and metal medallion are compression molded into clear acrylic coasters by new process

EMBEDDED

MANUFACTURERS of displays, jewelry, novelties, and advertising specialties have long been interested in the decorative and display effects obtainable when various objects are embedded in transparent acrylic. Until recently, such embedments were made by casting, a relatively slow and expensive process. Last month, however, Creative Plastics Corp., New York, N. Y., announced the development of a process for achieving the same ends by compression molding.

The compression molded embedments, called Plastallions, can be produced for one third to one fourth the cost of similar embedments made by casting, according to the manufacturer. Molds have already been made to produce Plastallions in the shape of round or square plaques, paper weights, key tags, letter openers, or coasters. The necessary molds for other shapes will be made as demand dictates. The maximum size is limited only by available press capacity. At present, the company is set up to handle pieces up to 12 by 14 inches.

Versatility of new embedment process is shown by mound of face powder 1 in. high molded into cylinder 2 in. high

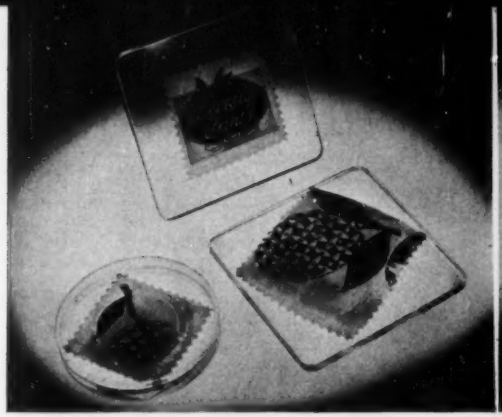


Despite the heat and pressures used in the molding operation, almost anything dry, including flammable or fragile objects, can be embedded by this new process. Among the objects which have been molded in successfully are fishing flies, paper labels, swatches of fabric, face tissue, lacy fern leaves, pretzels, coffee beans, the wishbone of a chicken, and mounds of face powder.

In order to mold-in such items successfully, it is necessary to hold flow to a minimum so that the objects do not break, tear, or move out of position. To avoid flow, positive molds with no relief must be used and molds must be designed for uniform application of pressure.

A fine screen Lucite molding powder is used to mold Plastallions. A measured layer of the powder is spread in the cavity, evened off, and tamped down. The object to be embedded is then inserted, carefully positioned, and covered with another measured layer of the molding powder. This, too, is tamped down.

The mold is then closed, heated to plasticize the



Paper weights and coasters used by manufacturer as advertising specialties contain fabric swatches, paper labels

Pretzels embedded in acrylic could be used to advertise pretzels or in a beer scraper as ad specialty for brewery

by Compression Molding

Costs are cut by molding instead of casting objects in clear acrylic. Fragile or flammable objects—even mounds of face powder—can be molded in

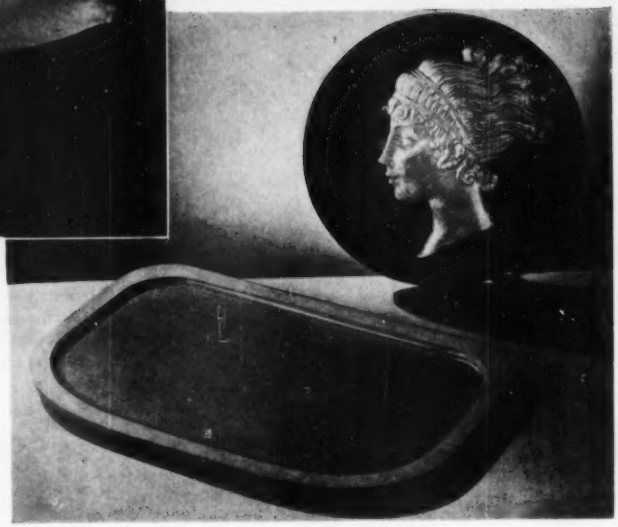
powder, and cooled to cure the piece. Temperatures ranging from 300 to 350° F. are used, depending upon the size of the piece. The exact temperature required for any particular piece is critical. Insufficient heat results in partially unplasticized areas, which show up as cloudy spots in the finished piece. Too much heat can char or burn flammable objects. The pressure used varies from 500 to 5000 p.s.i.

Creative Plastics has molded pieces with cycles as low as 3 min., including loading time. In general, the loading time takes up more than half the over-all cycle when single cavity molds are loaded by hand. Fragile or feathery objects such as fishing flies or ferns must be loaded more carefully and the cycles are correspondingly longer.

Early in its development work, the company found that cycles were too long and therefore costs were too high when it was necessary to heat and then chill heavy steel molds. To keep the cycles short, Creative is now using aluminum or beryllium copper molds made by Bondy Engineering Co., Brooklyn, N. Y. These lighter molds are more easily damaged, but the shorter cycles more than make up for the cost of frequent mold repair.

Coins, fishing flies, and other small objects can be molded into 1½ by 1¼-in. key tags. Center tag contains paper imprinted with advertisement for bank. Reverse side contains serial number which bank keeps on record so that keys can be returned to owner if lost

Shoe lasts of wood waste-resin material are carved from molded blanks. Machining is more economical because of range of sizes and widths, which would otherwise necessitate many molds



Plaque for wall decoration and hamper top are molded of wood waste-resin material. Hamper top is later covered with a sheet of cellulose nitrate or other material; the plaque is painted

Wood Waste Moldings Find New Markets

WOOD waste bonded with synthetic resins has been used to date chiefly in the production of structural boards of comparatively large area either for cabinet manufacture or for wall board and construction sheathing.[1] Some work has been done on the molding of core forms for toilet seats but much remains to be done in mass production of smaller pieces from these materials.

A company constantly experimenting in the molding field is Scientific Creators, Inc., a division of Decorative Cabinet Corp., South Kearney, N. J. The parent company makes knocked-down clothes closets and similar items, a big by-product of which is a huge quantity of sawdust and other wood waste. Scientific Creators has been working on the molding of this waste with a variety of resins and under a variety of techniques for some years, and has now registered the tradename Xon to cover all of its products so made. The company is expanding this molding operation rapidly and anticipates a consumption of 3,000,000 lb. of resin a year when foreseeable markets are fully expanded.

The ingredients used in this operation are sawdust, a thermosetting resin — phenolic, urea, melamine, resorcinol, or a mixture of more than one— and fillers such as fiber and cotton, plus chemical additives declared to promote good flow in molding. Formulations vary widely and the resin content of any given piece may be anything from 3 to 25% depending upon the density and strength required in the finished product, the type of waste, resin, and filler used, and the moisture content of the waste.

The company makes no attempt to precondition its wood waste to special moisture content but takes the waste with moisture ranging anywhere from 5 to 20% and makes the required adjustments in the resin and in the press pressure. It is occasionally necessary to preheat the complete compound slightly before pouring it into the cavities.

The ingredients may be mixed in a standard chemical mixer, but better results are declared to be obtained if the mix is rolled. No liquid is put into the mix; the compound is fed to the molds in powder form. Molds are stated to be much cheaper to produce than conventional molds for thermosets. Any of the mixes may be dyed in process.

The powder mixture is packed into the mold by hand, the packing amounting almost to hand compression when heavy density products are required. From then on the technique is the same as for standard compression molding, the work being done on 500-ton compression-type presses. Pressure during molding is between 500 and 2500 p.s.i., and mold tem-

[1] "Resins Bond Wood Waste Board", MODERN PLASTICS, 26, 59 (Feb. 1949).

peratures between 225 and 275° F. The cycle varies from 1 to 15 min. depending on the type of mix, density and strength required, and size of piece.

Already over 300,000 toilet seat cores for covering with pearlescent cellulose nitrate have been produced by the plant, using a medium density mix with Durez resin. Under the firm's expanding production program, 12,500 of these units will be produced weekly. Another item which is expected to run up to 750,000 units per year is a molded hamper top of light density, similarly to be covered with decorative sheet of cellulose nitrate or other plastic material. Two styles of coat hangers, wishbone and wardrobe designs, are stated to be going into big production, the target being 1,000,000 a year.

Finishing

The above products are all molded to shape, requiring only drilling (done with wood-working tools), coating, and final finishing. The wood waste products can be worked more easily than wood because of their uniform physical structure, but where the material is produced in high densities, harder tools are required for machining and finishing. Experimental pieces have been covered in a post molding process with rubber, foil, printed paper, leather, and veneer cemented in place.

A heavy duty shoe last is an example of a product deliberately machined from molded blanks of the wood waste-phenolic material. Because of the wide range of shoe sizes and styles, it is more economical to carve the lasts from these blanks than it is to produce molds. And the machined shoe last gives service superior to carved hard wood in shoe factories where both chemical and physical punishment are involved. An average density Xon material is stated to have 3.3% water absorption in 24 hr. by weight.

Scientific Creators is currently manufacturing flat boards up to 2 by 3 ft. in maximum size, and various thicknesses up to ¾ inch, in four standard wood shades — walnut, maple, oak, and mahogany. The company is working on the development of continuous production of board and is in advanced experimental operation on an extrusion technique which is expected to be of great value to the parent company on profile moldings, corner pieces, and edgings. Indeed, if such extrusions are fine enough, they would be expected to have a big market in the whole picture framing, home construction, and decorative field to the extent of over 70,000,000 linear ft. per year.

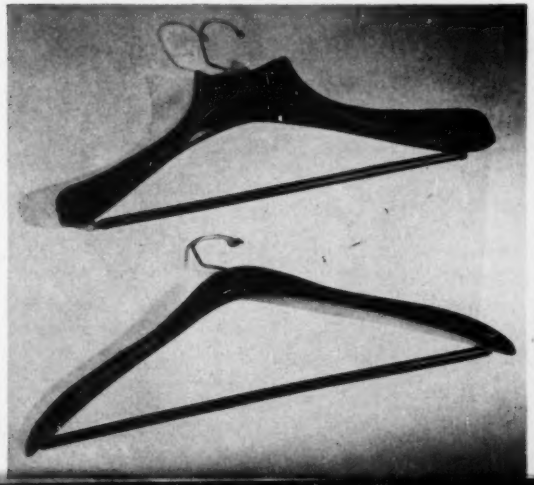
Another project development involves the molding of a table top from Xon and in the same operation putting an ornamental melamine surface on it. This would allow for round edged tables with complete melamine surfacing and would eliminate edge moldings.

Less costly

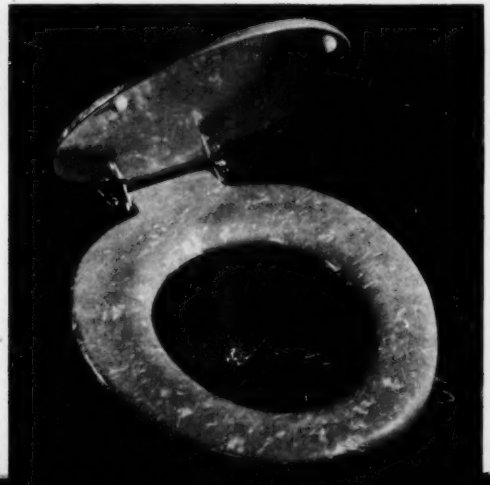
The economics of the process are interesting, although wide variation in densities makes an overall price picture confusing. However, taking comparable densities in original wood and resin-bonded wood waste, the latter product is generally less costly, at times to the extent of 50 percent. A comparison between wooden toilet seat cores and molded Xon cores shows that the rough wooden seat costs from $1.75 to $2.15 while the molded core at the same stage of finish is approximately 40% cheaper with finishing operations both simpler and cheaper.

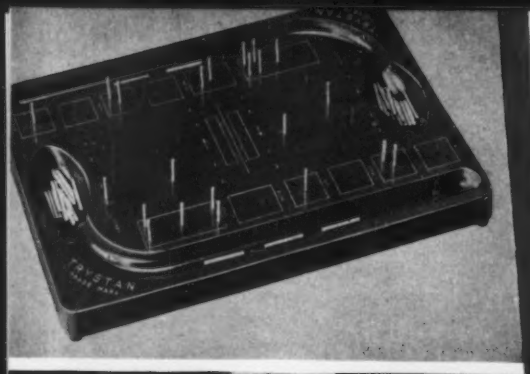
Far from competing with other plastics, these wood waste-resin products are planned to supplement and be supplemented by other plastics. In large pieces where extreme light weight is not required, they may be used as core sections to be covered with plastics either by lamination, drawing, dipping, or spraying. In small pieces they can provide low-cost parts and, through machining of blanks, a big range of special sizes and styles.

Two styles of coat hangers are being molded of wood waste material, low in cost and easily worked. Production aim is a million a year



Pearlescent cellulose nitrate covers toilet seat core which is compression molded of a medium density mix and phenolic resin

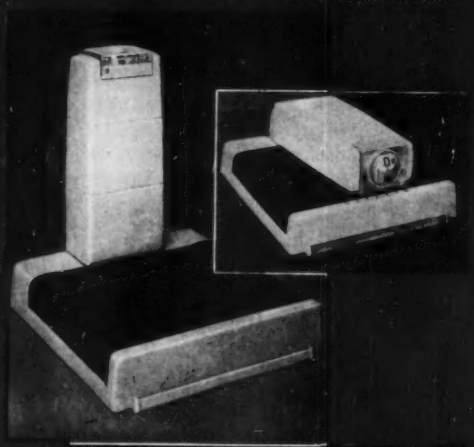




Trystan, a new two-handed card game similar to cribbage, utilizes a scoreboard molded of red Resinox phenolic. The board is 9½ in. long, 6¾ in. wide, and ¾ in. high. Two molded-in troughs hold the counters, which are placed in ¼-in. deep holes to mark the score. Lee Deane Products, 1708 E. 61st St., Los Angeles, Calif., molds the phenolic boards for Trystan Game Co., P.O. Box 2326, Reno, Nev.

Child's feeding dish is molded in one piece of pink or blue Melmac melamine formaldehyde. The dish has two compartments with sloping bottoms and undercuts on front edges to automatically load the spoon instead of allowing the child to push the food out of the plate. The easily cleaned dish is flat and heavy enough to be practically tip-proof. Spoon has a melamine handle molded directly around the metal shank. Melamine parts are molded by Imperial Molded Products Corp., 2925 W. Harrison St., Chicago. Dish and spoon are distributed by Givens & Co., 123 Lullabye Lane, Clarendon Hills, Ill.

PLASTICS

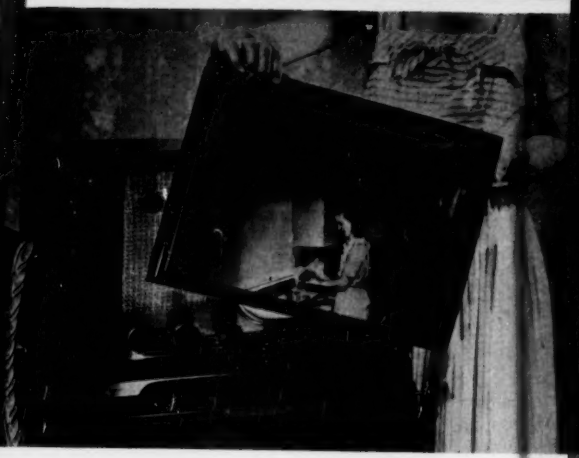


Moisture-proof, corrosion-proof, colored durable housing for new folding bathroom scale is molded of Tenite II cellulose acetate butyrate. The tower-like structure brings the weight scale closer to the eye. The scale is 12½ in. high with the tower up, 5 in. high when the tower is folded. The seven-part butyrate housing is molded in white, blue, green, black, peach, rose, or maize to match the manufacturer's aluminum hampers. Prolon Plastics Div., Pro-Phy-Lac-Tic Brush Co., Florence, Mass., molds the housings. Detecto Scales, Inc., 540 Park Ave., Brooklyn 5, N. Y., manufactures the folding scales

Silent Maid Crumber set consists of a miniature dust pan and whisk broom molded of Nixon cellulose acetate. The set is durable, colorful, and easy to keep clean. The dust pan is molded in a rich maroon colored acetate; the brush handle is ivory color. For convenient storage, the brush can be mounted in a slot in the top of the dust pan and the set can be hung up. The crumber set is manufactured by Mastercraft Plastics Co., Inc., 95-01 150th St., Jamaica 4, N. Y.

PRODUCTS

Attractive, economical Pilsener type beer glasses are molded of Lustrex polystyrene. These Tallite glasses are light in weight, but are durable. The part of the glass which holds the liquid is molded of crystal clear material. Transparent colored material is used to mold the bases and the low sturdy stems. The polystyrene glasses are sold attractively packaged in sets of four. They are manufactured and distributed by New Plastic Co., 1017 N. Sycamore St., Hollywood, Calif.



Thin television enlarging lens utilizes Fresnel principle of magnification. Hundreds of tiny circular grooves are pressed into a thin sheet of Plexiglas which serves as magnifying element. This element is then placed in a sandwich which includes a filter to eliminate glare and two protective outer sheets of thin acrylic. The screen is made in three sizes to fit sets with 7, 10, and 12-in. tubes by Willson Magazine Camera Co., 6012 Media St., Philadelphia, Pa.

An unwrapped loaf of sliced bread can be kept fresh in the Sta-Fresh bread dispenser molded of Koppers polystyrene. The bread rests on a polystyrene platform which is suspended on cloth strips. Turning the roller at the top of the dispenser takes up on the cloth strips and brings the bread to the top. Detroit Plastic Molding Co., 26200 Harper Ave., St. Clair Shores, Mich., molds the plastic parts. Lattner Industries, Inc., 11169 Grand River, Detroit, makes the dispenser

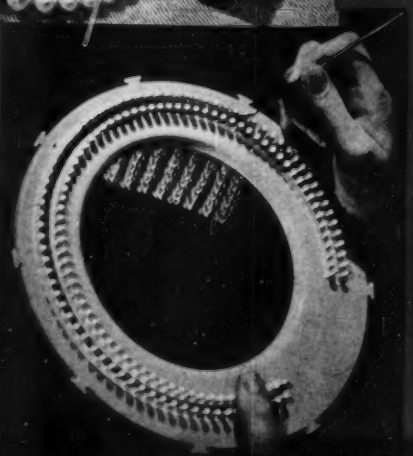
Polystyrene lamp can be changed from a table lamp to a pin-up lamp by a simple adjustment. The base and the body of the lamp are held together by a bolt which goes through a slot in the lamp body. The change from one type of lamp to the other is made by loosening the wing nut and sliding the bolt the length of the slot. Precision Plastics Co., 4647-61 Stenton Ave., Philadelphia, molds the plastic parts for Oxford Industries, 2102-04 E. Gillingham St., Philadelphia

Periodical binders have transparent vinyl front and back covers. Publication name does not have to be stamped on cover and the binders are interchangeable. Front and back covers are cut from 0.050 in. thick clear rigid Vinylite sheet and are electronically heat sealed to a flexible brown vinyl extrusion 2½ in. wide and 0.045 in. thick. Metal channel inside the binder is held in place by strips of vinyl which are electronically bonded to the flexible vinyl extrusion. The binder is manufactured in five sizes to fit various sizes of magazines by Marador Corp., 6831 San Fernando Blvd., Glendale 1, Calif.

Ice "cubes" shaped like the card suit symbols—hearts, diamonds, clubs, and spades—can be produced in tray molded of Bakelite polyethylene. The frozen forms can be removed easily by bending the flexible tray. Columbus Molded Plastics Corp., 1703 Keller Ave., Columbus, Ind., molds the trays in the natural color and in pastels

PLASTICS

Lipstick size perfume dispenser has a colorful housing molded of Beetle urea. It can be carried in the purse without loss of the expensive contents through leakage. When the perfume is needed, a single drop is dispensed at a time. The more expensive models have hand-painted designs on the plastic housing and jewels on the metal cap. The urea parts are molded by Haas Co., Mendon, Mich. The dispenser is made by Atomette Co., 40 East 21st St., New York, N. Y.



Knitting can be done without needles and without knitting experience on the Ezee Knitter made of Tenite II cellulose acetate butyrate. The device consists of a carrier frame with 154 pegs in two rows on either side of a slot. The yarn is wound around the pegs, using one peg for each stitch necessary, and then back over the pegs so that there are two strands of yarn on each peg. The lower strands are then lifted with a crochet hook, and the finished row of knitting comes out the bottom of the knitter through the slot between the pegs. The knitter is durable and light in weight and its smooth surface will not trap dirt or snag the yarn. All Plastics Corp., Avon-by-the-Sea, N. J., molds knitter for Creative Crafts Corp., 46 E. 11th St., New York

Panel meter has transparent case molded of Koppers high heat resistant polystyrene. Both front and back of case are transparent so inside of meter can be examined without removing case. The meter is made in ranges from 20 microamperes to 50 amperes and 5 millivolts to 500 volts by Assembly Products, Inc., Chagrin Falls, Ohio

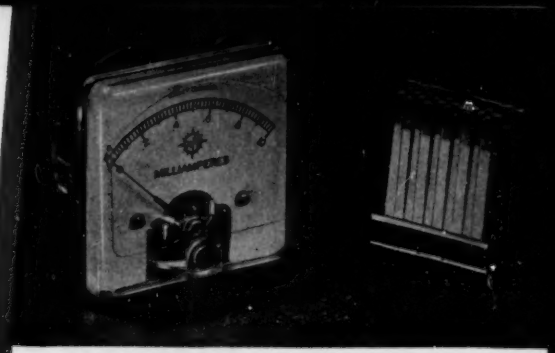


Table cloth made of Fabrilite vinyl-coated fabric is highly resistant to food stains. It can be wiped with a damp cloth after each meal or scrubbed with soap and water to remove more stubborn spots. The vinyl-coated table cloths save time, money and effort because they require no laundering. They are smartly styled by well-known designers and made in a variety of colors. Scroll pattern is shown. Brandtex vinyl-coated tablecloths are made by Fabrics Div., E. I. du Pont de Nemours & Co., Inc., 350 Fifth Ave., New York, N. Y. Brandwein & Co., 6 E. Lake St., Chicago, is the exclusive distributor

PRODUCTS

Colorful, clean-looking flower pots are molded of Tenite I cellulose acetate in various sizes. Earth from a standard 4½-in. florist's pot fits easily into the 5-in. plastic container. Matching saucers can be used to catch drainage or can be filled with water to feed the plant by capillary action. Pots are manufactured of red, green, or yellow cellulose acetate by Nelson-Wise Corp., Millerton, N. Y.

The Spuriscope, which resembles a telephone dial, is actually a device to help identify counterfeit currency. The housing and finger wheel of the device are molded of Beetle urea. The user dials the serial number on any piece of currency and an alphabetical designation shows up in the rectangular opening in the housing. If the bill in question does not bear the same letters, it is counterfeit. Accurate Molding Corp., 35-20 48th Ave., Long Island City, N. Y., molds the urea parts for Ruth Devices Corp., 11 Broadway, New York, N. Y.

YOU'LL GET A LAUGH OUT OF THIS . . . (we did)

Midland has been quite proud of its delivery schedule for the past few years and we have, of course, advertised it consistently on these pages for many months. We did get behind on an order from Patent Button Company, Knoxville, Tennessee, and their Mr. Snoddy prepared the advertisement below which is a perfect image of our "cat" advertisement with just a few changes. Our hat's off to Mr. Snoddy for some mighty good copy. P.S. They have their Hobbed Cavities now so we're all set to handle your requirements!

delivery?

AT MIDLAND IT'S FASTER THAN AN ELEPHANT CAN HAVE LITTLE ELEPHANTS!

This wall socket hobbed cavity by Midland incorporates two narrow "T" projections raised 3/16 inches above the cavity surface. By using hobbed cavities of this type in place of the conventional insert cavities, all unsightly parting lines were eliminated and in addition to improving appearance, the hobbing was accomplished at only a fraction of the cost of cavity duplication by machining methods.

Yes, actually! It takes an elephant two long years—but when Midland gives birth to a plastic mold—she seldom stays in labor for more than four or five months. Of course the whole period is longer than that but it is not often that eighteen months is exceeded between conception (of mold design) and delivery.

So if you have a gleaming idea for a molded product, just grab it by the tail and pitch it over to MD&E where delivery is gauged by elephantine standards.

For a clear picture of our equipment and our know how (but not when) write for a copy of "Shaping Tomorrow Some Other Time". Better still, send in your prints—at least two years before you need the tools.

MIDLAND DIE AND ENGRAVING COMPANY
1800 W. BERENICE AVENUE • • • CHICAGO 13, ILLINOIS
Makers of Plastic Molds • Die Cast Molds • Engraved Dies • Steel Stamps • Hobbings • Pantagraph Engraving

MD&E

Meshed Multi-Screw Compounder-Extruder

A wide variety of shapes, including "impossible" sections, is produced by new machine. Power requirements and labor costs are low

A VERSATILE two-worm extruder recently introduced to the American market is not only capable of producing unusual extruded sections from any thermoplastic material, but is also reported to do a thorough simultaneous job of compounding, extruding, coloring, and pelletizing these materials.

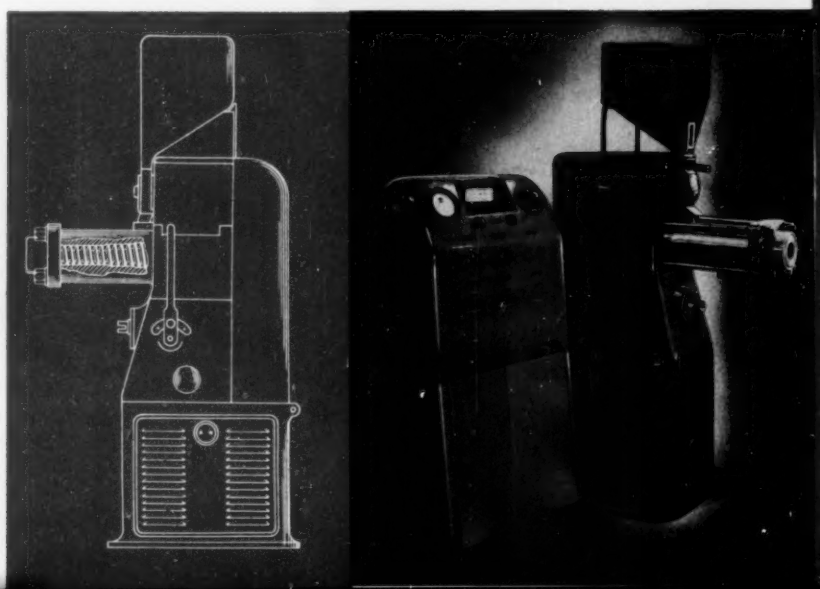
This new extruder is capable of producing round sections ranging from monofilaments 1 mil in diameter to 10-in. tubes, film as thin as 1 mil, strips up to approximately ¼ in. thick by 31 in. wide (both rigid and soft), and flexible material such as used for upholstery in one and numerous colors up to 54 in. wide in thicknesses of 20 mils or more. On all of this work it is reported that close tolerances are held.

Of unusual interest is the fact that the 90 millimeter (3.54 in.) machine occupies a floor space only 65 by 28 inches. Net weight is about 1800 pounds.

*Reg. U. S. Patent Office

The extruder is equipped for either straight or cross head work. When two or more machines are operated in tandem, with ingenious fixed and moving dies, many different shapes of either continuous or variable sections can be produced in single or multiple colors.

The extrusion pressure of this new machine is high, even with small batches. The uniformity of the pressure permits highly successful production of multi-color extrusions in which the number of colors depends only upon the number of machines operated in tandem. Other work has been done with materials having different chemical or physical properties. For example, in one job, two extruders are used for producing a special gasoline hose. One extruder handles a soft polyvinyl chloride compound, while the second handles rigid polyvinyl chloride. The materials extruded by the two machines are fed to



Right: Partial section of compounder-extruder, showing position of meshed multiple screws. Far right: Side view of machine and control panel. Safety guard has been removed from drive

Front view of compounder-extruder. Power take-off for pelletizing is immediately underneath extrusion chamber

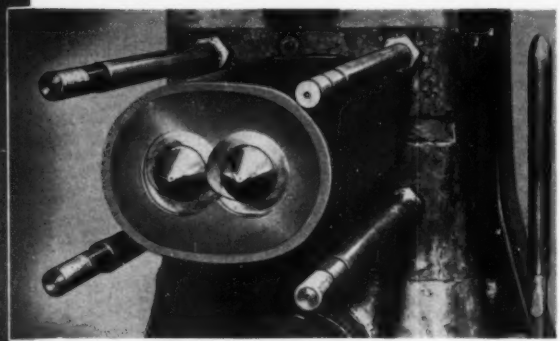
a special cross head, where two concentric tubes are extruded as a single unit with a soft inner wall and a rigid outer wall. Then a rotating mechanism within the cross head forms a spiral in the rigid material while it is still in a plastic state. Thus a flexible hose is produced with a soft, gasoline-resistant polyvinyl chloride inner wall and a mechanically strong spiral outer protector of rigid polyvinyl chloride, with the two materials permanently fused together.

Operating principle

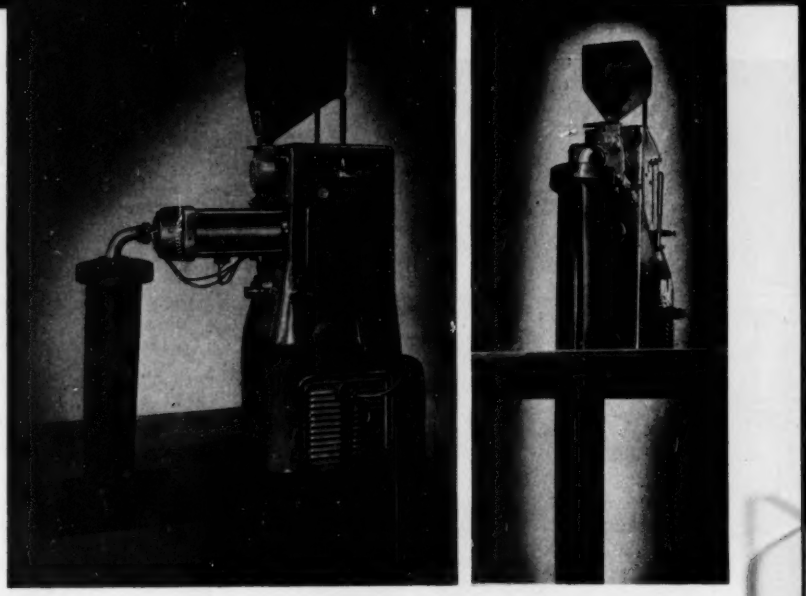
The fundamental principle of the two-worm extruder can be summed up as follows: Two screws, with threads meshing with each other, are each divided into three sections with different diameters and threads. The pitch of the mating flight sections on each screw is the same, thereby permitting the screws to turn in the same direction without interference. On the 90-millimeter (3.54 in.) extruder, the outside diameters of the three flight sections diminish from feed to die end. Since the worms are closely meshed, the shaft diameter must increase by the same amount as the flights decrease in order to maintain a constant relationship between them. Also, as the worms become smaller in diameter, their shape changes, the flights becoming progressively finer in steps, the coarser one being at the feed end where the worms have the largest diameters.

The feed section of each worm has four turns of thread, the next has five, and the final or extrusion end has fourteen. The first two screw sections compress the material, fed in powder or granular form from the hopper, while the third section, with its many turns of threads, thoroughly mixes the material, raises the temperature to melting point, and builds up the required extrusion pressure. Shaft shoulders resist any back pressure from the material.

The inside walls of the extrusion chamber are shaped somewhat like a figure eight. They are re-



Left: End view of extrusion chamber, with the adapter plate in position. Above: Adapter plate removed to show ends of the meshed screws



Extruding and slitting one-color polyvinyl chloride tubing in special die to produce sheeting. Slit tubing is delivered to take-up rolls and embosser. The machine is located on an elevated platform

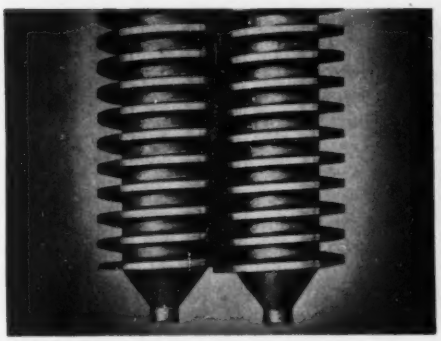
duced in dimensions in two steps in order to follow the reduction in diameter of the three worm sections. By this design the walls of the chamber are at all points equally spaced from the outside peripheries of the screws.

Worm diameters

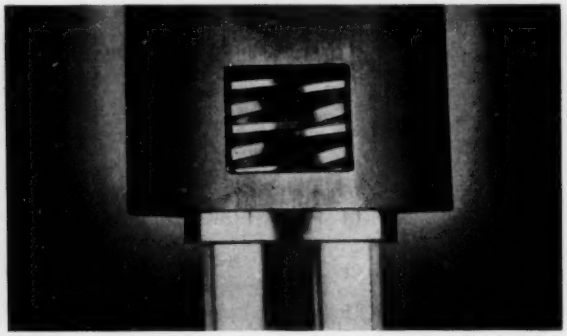
The actual screw section diameters on the 90-millimeter (3.54 in.) machine are 90 millimeters at the feed end, 85 millimeters (3.35 in.) in the center section, and 80 millimeters (3.15 in.) at the extrusion end. The corresponding shaft diameters are 40 millimeters (1.58 in.), 45 millimeters (1.77 in.), and 50 millimeters (1.97 in.).

Important to the operation of this extruder is the feed of material by means of an automatic volumetric charger mounted in the mouth of the hopper. This charger is provided with a speed control so that the quantity of material to be extruded may be increased or decreased as desired. No external vibrators or other agitating devices are used.

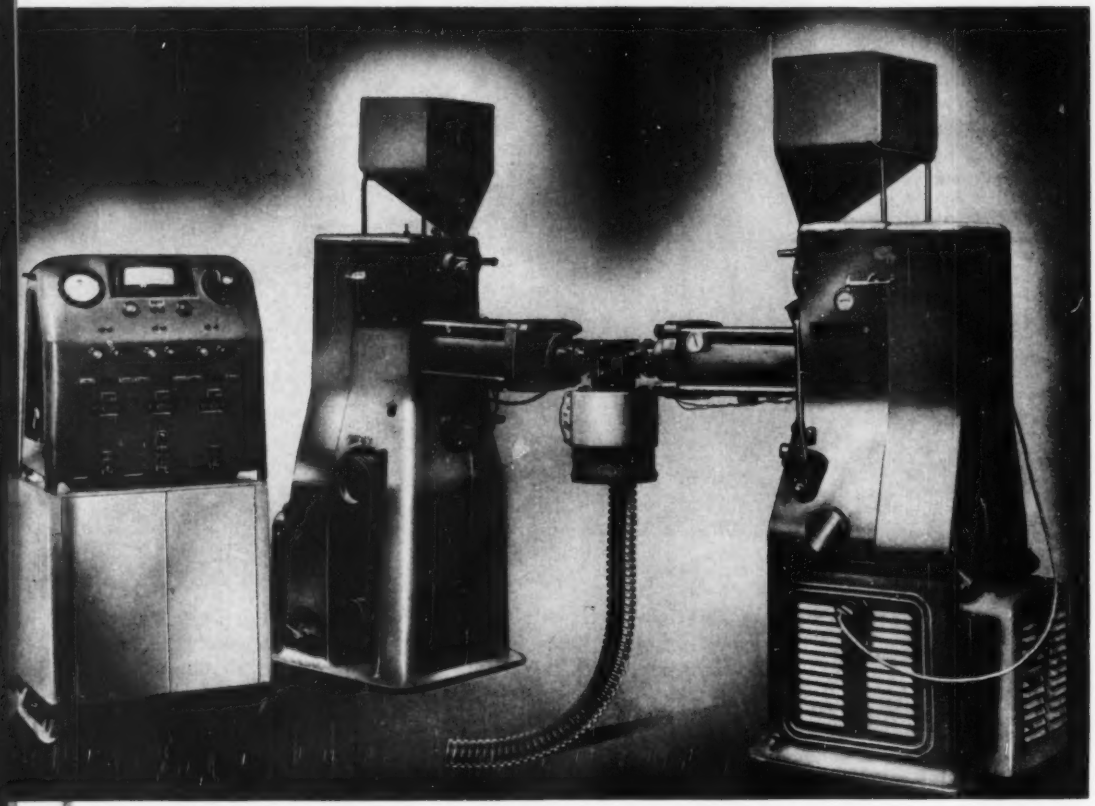
The machine is run by a three-phase, 5 hp. motor, but it is reported that this horsepower is never wholly absorbed when the machine is operating normally. The speed of the extruder screws is variable in three steps so that the material can be held for a longer or shorter time in the extrusion chamber, as required by conditions; this is especially important when handling polyvinyl chloride. Automatic circulation of lubricating oil and an oil cooling



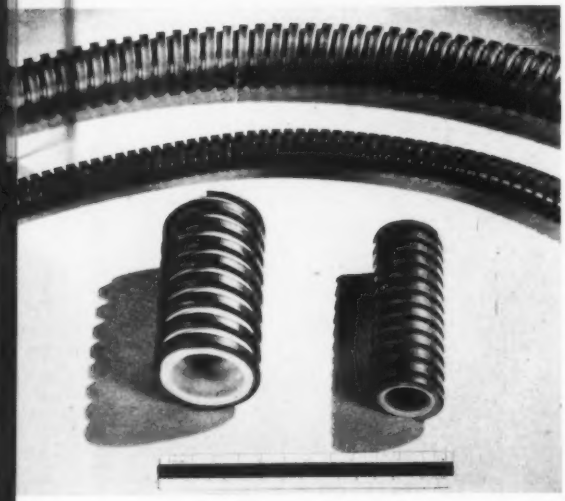
Delivery end of extruder screws, showing close meshing of threads. The screws rotate in same direction



Looking down on feed end of extruder screws through opening to which hopper attaches. Compare coarseness of thread with photograph at left



Two extruders operating in tandem to produce a flexible polyvinyl chloride hose with a soft inner wall and a hard, strong spiral outer wall. The rotating cross-head which forms the spiral is driven by a flexible shaft not shown here



Sections of two sizes of extruded spiral gasoline hose. The inner and outer walls are permanently fused together

device assure fully adequate machine lubrication.

Separate electrical heating units, with thermostatic controls, are provided for the extrusion chamber, the die attachment nut, and the dies themselves. Power requirement of the heaters is 2 kilowatts for the chamber and 0.8 kilowatt for the die attachment. Current consumption of the die heater varies, depending upon die size. These figures indicate the low current cost of operating the machine; since the extruder operates automatically, labor costs are also low. The net result is high production economy.

The manufacturer claims that successful compounding of thermoplastics in this extruder is mainly due to the reduced space between the screw threads from the loading end of the machine to the outlet. This reduction in turn causes a change in the specific volume of the material being processed and aids greatly in fully dispersing the ingredients of the mix. It also aids in building up pressure at the extrusion die. The material can not back up to the charger mouth nor stick on the screws, because the thread of each worm is continuously pushing ma-

terial through the corresponding thread of the other.

A number of items have been run in production on this extruder. For example, a ½-in. diameter flexible tubing is produced from a polyvinyl chloride for use in Europe by the illuminating and heating gas industry. Running in standard production, this tubing is reported to be produced at a rate of 48 to 50 lb. per hour. Again, one-color belting, suitable for ladies' or men's wear, is produced at 48 to 50 lb. per hour. Using two machines and a special cross-head die, two-color belting is turned out at a rate of 85 to 90 lb. per hour.

The gasoline hose mentioned previously, which in Europe is known as "Riflex" hose, is produced at 90 to 95 lb. per hour. In making this hose, with its soft polyvinyl chloride inner wall and unplasticized polyvinyl chloride outer spiral protection, the top capacity of both machines cannot be realized because the weight of the two different materials per foot of length of the hose is not equal.

The above figures are for extrusion only; when the machine was both compounding and extruding, these production rates were approximately 20% lower.

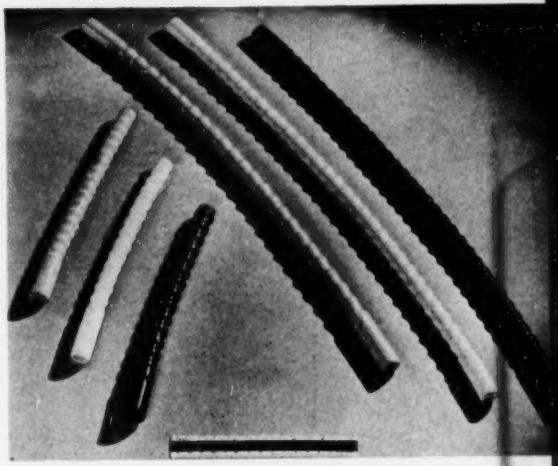
Compounding and pelletizing

On a test run in which this machine was used to compound and pelletize a plasticized polyvinyl chloride, the following ingredients were first mixed in a tumbling barrel: 200 lb. of raw polyvinyl chloride, 60 lb. dry plasticizer, 5 lb. lead carbonate, 2.6 lb. lead stearate, and 20 grams of coloring.

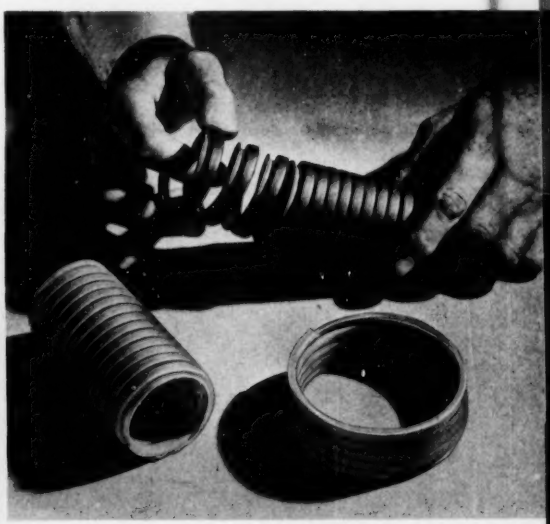
This particular run was made to ascertain not only the efficiency of the machine in compounding, but also the length of time it would take to change the color of the material being run. The first test batch

(*Please turn to page* 104)

Extruded wire coatings (left above), coated metal tube (second from right), and extrusions with complex internal divisions illustrate the versatility of the new equipment

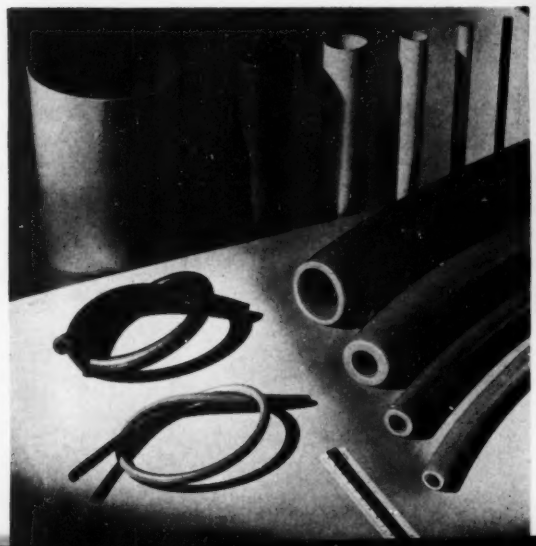


Flexible polyvinyl chloride tubing for illuminating gas has varying cross-section automatically produced in cross-head

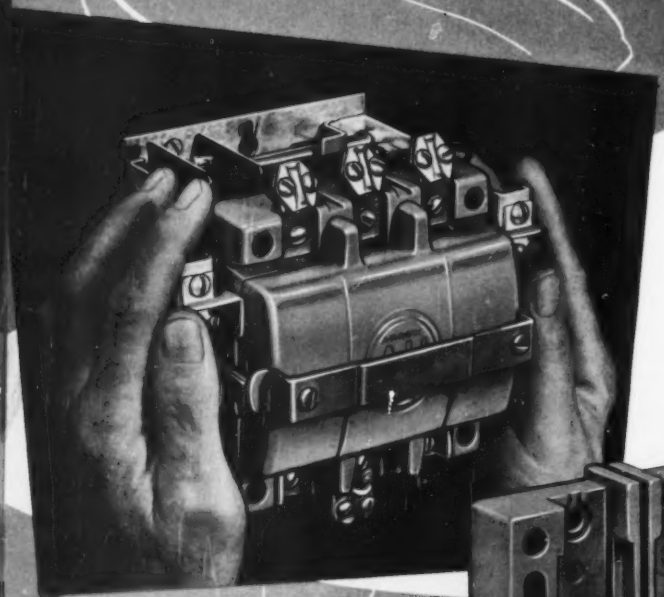


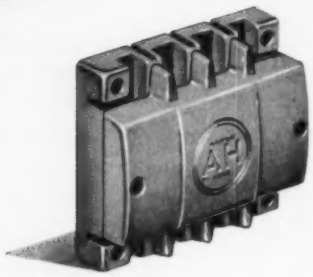
Adjacent spirals of rigid polyvinyl chloride automatically interlock as extruded, forming flexible airtight tubes

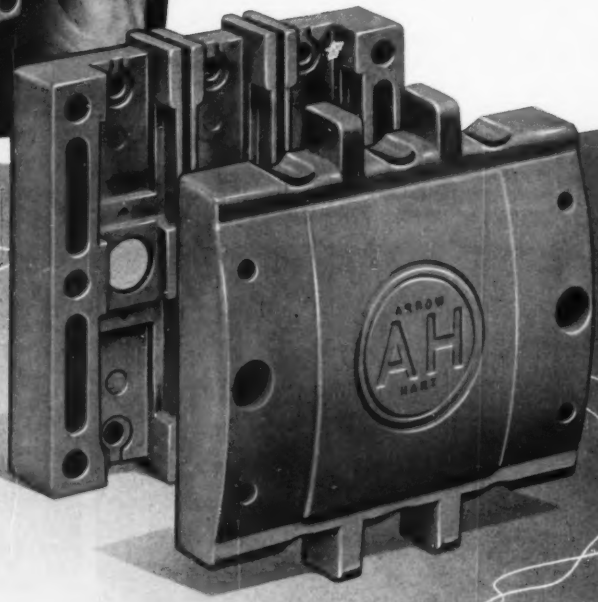
Multiple screw extruder can produce round sections, in hard or soft formulations, in a wide range of internal and external diameters, from all types of thermoplastic materials



Plastic Magic







The base illustrated at the right is 7½" long, 7½" wide and 1½" deep; the head is 7½" long, 7½" wide and 1 3/16" deep...proof that Plaskon Alkyd's high dimensional stability makes it readily adaptable to large, solid pieces.

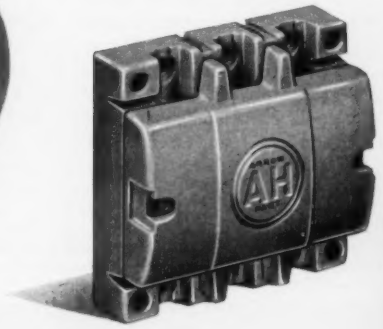
BORN WITH PLASKON ALKYD

Plastic magic became a reality with the birth of Plaskon Alkyd. It has established a new high for plastics in both electrical and physical properties. This fact was dramatically proved again by The Arrow-Hart and Hegeman Electric Company when recently they redesigned their line of magnetic starters.

Among the many tests conducted by Arrow-Hart engineers to find a suitable plastic material for the bases and hoods of these new starters was the test for arc resistance. Only Plaskon Alkyd passed the grueling current tests that the plastic materials were subjected to. In fact, after withstanding twice the current of the next best plastic material, the starter made with Plaskon Alkyd still operated satisfactorily.

Plaskon Alkyd is a new *thermosetting* plastic developed and manufactured exclusively by Plaskon. In addition to its higher arc resistance . . . it has greater dimensional stability than any other plastic material commonly used as an electrical insulator, combined with resistance to high temperatures, up to 400° F. under continuous exposure . . . It has higher resistance to water and it is unaffected by organic solvents, fats, oils and dilute acids.

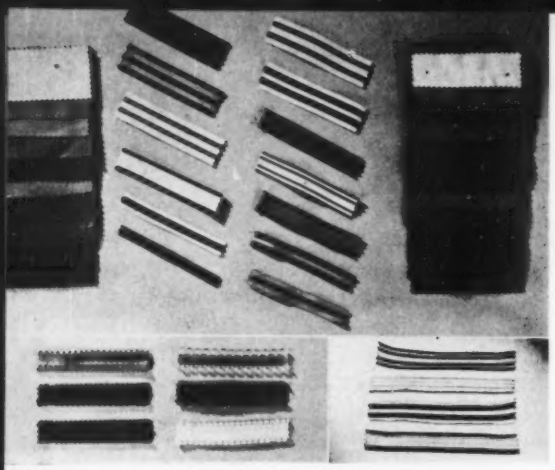
An experienced Plaskon field man will be glad to discuss the many advantages of Plaskon Alkyd with you or your molder. Just let us know when he can call.



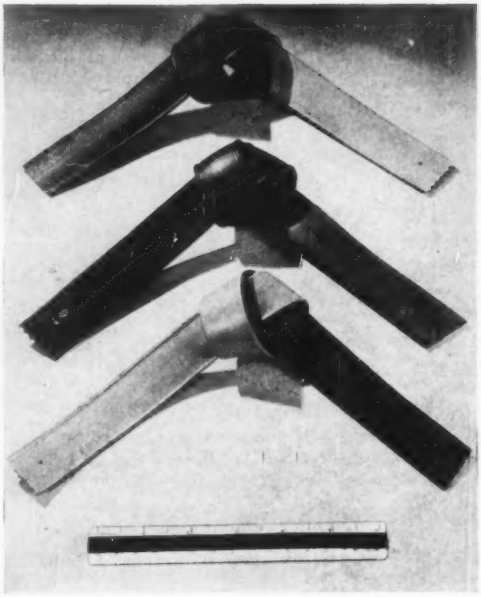
The magnetic starters are molded and manufactured by the Arrow-Hart and Hegeman Electric Company, Hartford, Conn.

PLASKON DIVISION • LIBBEY • OWENS • FORD GLASS COMPANY
2121 Sylvan Ave., Toledo 6, Ohio • *In Canada:* Canadian Industries, Ltd., Montreal, P.Q.
Branch Offices: Boston, Chicago, Los Angeles, New York, Rochester, San Francisco
Manufacturers of Molding Compounds, Resin Glues, Coating Resins

PLASKON®
ALKYD



Embossed vinyl fabrics (upper left and right), fluted edge strips (lower left), and multicolor beltings are only a few of the extrusion possibilities of the machine



Flexible two-color reversible belting is produced by two extruders feeding into a special cross-head die

was run through the extruder without the coloring pigment. After a satisfactory run had been made on the plain material, a similar mix containing 20 grams of red coloring was fed to the machine. After the red had been run through, a similar batch colored brown was placed in the hopper. In each case an elapsed time of 8 to 10 min. was required to completely purge the machine of the color previously run. These different colors of material were all compounded and pelletized at a rate of 65 to 70 lb. per hour. Unplasticized polyvinyl chloride was colored and pelletized at the rate of 54 lb. per hour; cellulose acetate was compounded at the rate of 55 to 60 lb. per hour. Crystal polystyrene dry mixed with a suitable coloring material was extruded with perfect color dispersion and pelletized into uniform pellets at the rate of 65 to 70 lb. per hour.

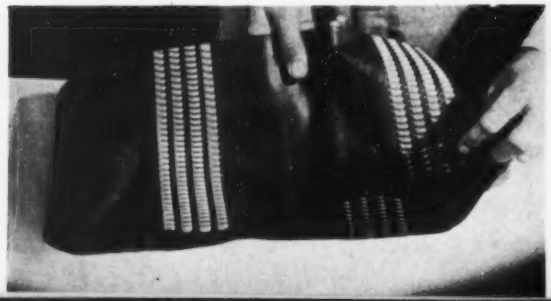
End products

The accompanying illustrations of a wide variety of shapes produced on this extruder show clearly that the machine is based on a thorough knowledge of machine design and, even more important, of unique extrusion die design. The dies used run all the way from standard stationary dies for producing the more familiar types of extruded sections, through special dies for incorporating two or more colors or two or more different materials into the same piece, to ingenious power driven attachments which make homogeneous non-uniform sections of one or more materials in different sizes and shapes.

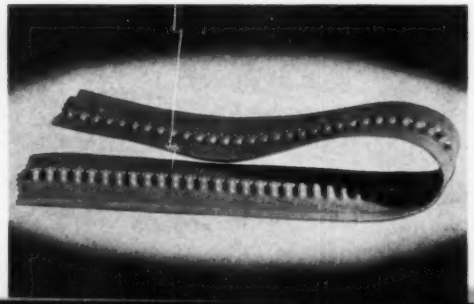
Such outstanding examples indicate that the extrusion process can now be employed for the production of many items heretofore considered impossible to extrude. Furthermore, the meshed screw principle on which this new extruder works permits not only two screws but three or five or even as many as ten to be designed into an extruder which would not be cumbersome either in physical dimensions or in operating characteristics.

Jackson and Church Co., Saginaw, Mich., are exclusive United States distributors for this new multiple screw compounder-extruder. The machine is manufactured by R. H. Windsor Ltd., London, England, under L.M.P. patent licenses for the British Empire and North and South America (except Brazil).

Two-color polyvinyl chloride tubing, with one color embossed in raised pattern. When slit, tubing produces sheeting up to 54 in. wide



In another embossed product, the extruded strip comes from the die with patent finish and the central decoration shown



General-Purpose Steel

for Machining and Hobbing

THERE are four fundamental steps required before a new product can be produced in plastics. 1) It must be designed for plastics. 2) A mold must be engineered for this particular item. 3) A special mold must be constructed. 4) The parts must be molded and finished satisfactorily. An error in judgment in any one of these steps will result in either no production at all or in unsatisfactory items.

Selection of steels

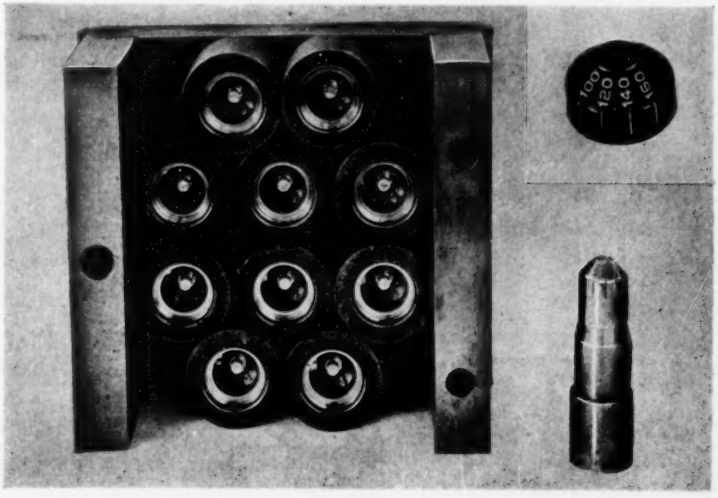
Selection of the steels used in constructing the mold is of the greatest importance, although it is not generally thought of in this light by many in the plastics industry. There are many different parts in a mold—mold nest, knockout pins, movable mold parts, force plugs, cavities, etc. Generally speaking, each of these different parts requires a different grade of steel if the life expectancy of a completed mold is to be satisfactory.

Force plugs, for example, are generally machined and hence a steel with good machining properties is required. When hardened, this steel must have an excellent case, a tough core, and be capable of taking a high polish. In many cases the cavities of a mold are hobbed, and therefore a relatively soft grade of steel must be used. It is even more important in steel for cavities that a very tough core result after the parts have been hardened. The steel must take a hard case and a highly polished surface.

There are many grades of steel on the market today and it has been possible for a mold maker to select a satisfactory type for each class of mold part with the possible exception of that for cavities. Frequently, hobbed cavities are not completed in the hobbing operation. Certain portions of them must be machined to complete the cavity contour. A good grade of hobbing iron having an analysis of 0.10% carbon and 0.20% manganese will produce excellent hobbed cavities with a minimum of difficulty in the hobbing operation; the case hardness of approximately Rockwell C-62 will also be satisfactory. There are a number of difficulties, however, in the use of this type steel. First the yield strength of the core is only about 38,000 p.s.i. and there is danger of the cavities sinking if excessive pressure is required, as in compression molding of hard thermosetting materials. Second if machining operations are required to complete the cavities, the dead soft steel will produce a gummy chip. This increases roughness as well as the size of the tool mark. Although it is possible to stone and polish such tool marks out of the molding surface, the cost of such cavities is greatly increased if a highly polished job is required. Third,

(*Please turn to page* 108)

PHOTOS COURTESY THE CARPENTER STEEL CO.



Two hobbing operations and one machining operation were required to make 10-cavity mold for small heater control knob. Second hobbing brought up letters in cavities

To increase your sales and profits

USE this colorful campaign!

Reprints of the advertisement* across the way are going to over 15,000 carefully selected prospects and customers . . . including all of yours, we hope. Send us the names and addresses of any you want to be sure are on the list.

These reprints help you to take extra advantage of the *proven pre-selling* that this campaign is doing among more than *400,000* top manufacturing executives, designers and materials buyers . . . pre-selling that is going on right now in your own territory.

If you have a sales, merchandising or technical problem, let us take a crack at it with you. We ought to be able to work it out and will welcome the chance.

* This advertisement – and this entire campaign – is appearing regularly in such publications as FORTUNE, MODERN INDUSTRY, DESIGN NEWS, PLASTICS WORLD, PACIFIC PLASTICS, CANADIAN PLASTICS.

Stool seat molded by American Insulator Corp. for Thonet Bros. Inc.
Year-round chair, made by Thonet Bros. Inc.
seat and back molded by Plastics Engineering Co.
Your Product

Modern way to "move" furniture...

there's selling magic in BEETLE* Plastic

BEETLE plastic seats, backs and arm rests move furniture out of stores and into homes.

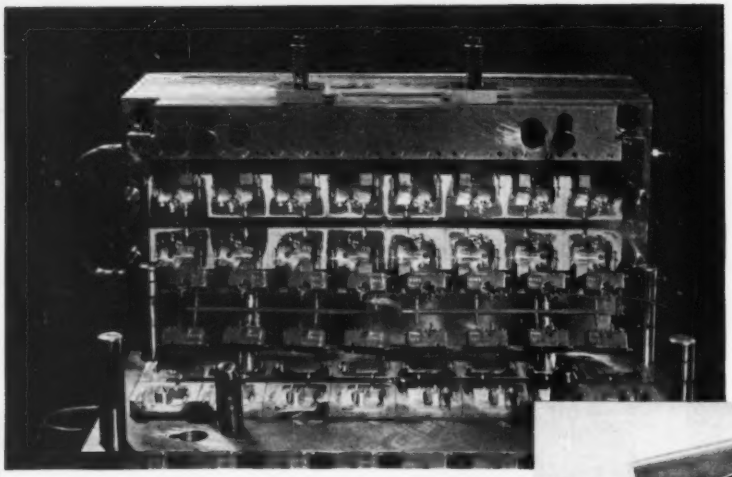
Why? Because BEETLE plastic parts add these selling features to good furniture . . . 1. Extra comfort; permanent color and luster; 2. strength, durability, light-weight; 3. ease of handling and cleaning; 4. resistance to water, alcohol and common solvents. And BEETLE plastics' exceptional properties (add excellent electrical insulation, resistance to heat, and non-flammability to those already listed) make them ideal for many different kinds of products . . . from wiring devices, appliance housings and handles to bottle caps and buttons. Can't your product, too, be produced and sold faster with BEETLE molded parts? It's easy to find out. Ask us or your molder for design and production data.

AMERICAN Cyanamid COMPANY

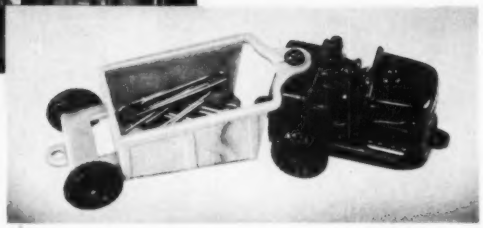
PLASTICS DEPARTMENT
32 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

*Reg. U. S. Pat. Off.

BEETLE* plastics—urea-formaldehyde thermosetting molding compounds. MELMAC* plastics—melamine-formaldehyde thermosetting molding compounds, industrial and laminating resins. URAC* resins—urea-formaldehyde thermosetting industrial resins and adhesives. MELURAC* resins—melamine-urea-formaldehyde thermosetting resin adhesives and laminating resins. LAMINAC* resins—thermosetting polyester resins.



Body of toy tractor is produced in 16-cavity injection mold which was hobbed from new steel, then given a final machining. The case and core were reported to be uniform



the absence of alloys in the chemistry limits the life of the tools so that shorter production runs would be expected. Fourth, this hobbing iron must be water quenched and is therefore subject to excessive size change.

For many years The Carpenter Steel Co., Reading, Pa., has been working to develop a steel which would be satisfactory for practically all hobbing operations, yet at the same time would have excellent machining characteristics. Such a steel has just been announced. Known as Samson Extra, this steel has the following type analysis: carbon 0.10%, manganese 0.30%, silicon 0.20%, chromium 2.30 percent. It is a case hardening alloy with average properties as follows:

	Oil quench	Water quench
Case hardness—		
Rockwell:	C-64	C-65
Core hardness—		
Rockwell:	C-20	C-25
Core properties—		
Tensile:	108,000 p.s.i.	120,000 p.s.i.
Yield:	69,000 p.s.i.	91,000 p.s.i.

It will be noted that the yield strength of this steel when oil quenched is double the 38,000 p.s.i. of a good grade of hobbing iron. This eliminates the sinking problem mentioned previously. The manufacturer claims that Sampson Extra machines very satisfactorily because of its combination of elements and control in manufacture. Specifically, it states that the absence of nickel in this alloy is the paramount reason for its excellent machining qualities.

Hobbing qualities

Testing this steel to ascertain its hobbing qualities, a mold blank 1.75 in. in diameter by 2.25 in. long was used. A hob measuring 0.910 in. in diameter tapered 0.045 in. per in. was sunk into this mold blank using a load of 113 tons with one push. A depth of cavity measuring 0.71 in. was obtained. This compares with a cavity depth of 0.82 in. obtained with dead soft iron using the same size mold blanks and hob. Again using the same hob, a depth of only 0.48 in. was obtained with steel having the following analysis: carbon 0.10%, nickel 1.30% and chromium 0.70%.

Although Sampson Extra steel has not been generally announced previously, Carpenter Steel felt that before it placed it on the open market it should offer it to several mold makers and follow closely the results obtained. The following case histories bear out the laboratory results obtained by Carpenter.

Specific uses of new steel

The L.W.L. Co., Meriden, Conn., produced a six-cavity clock crystal mold, each cavity measuring $\frac{5}{8}$ in. deep by $3\frac{3}{4}$ in. in diameter. These cavities were machined and polished, no hobbing being required. The mold maker claims that polishing time was cut 10% and the reason for using this mold steel was that he required a super mirror finish. This mold is now in operation at Crellin Plastics Co., Chatham, N. Y., and according to the molder is performing very satisfactorily.

The Dillon-Beck Mfg. Co., Hillside, N. J., produces a 16-cavity injection mold for the body of a toy tractor. The cavities were hobbed by Newark

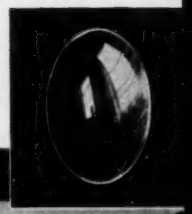
Die Co., Newark, N. J., from this new steel and the final machining was accomplished by Dillon-Beck. The hobability was reported as better than that experienced with any steel previously used, cavities polished easier than hobbing iron, and the case and core were very uniform.

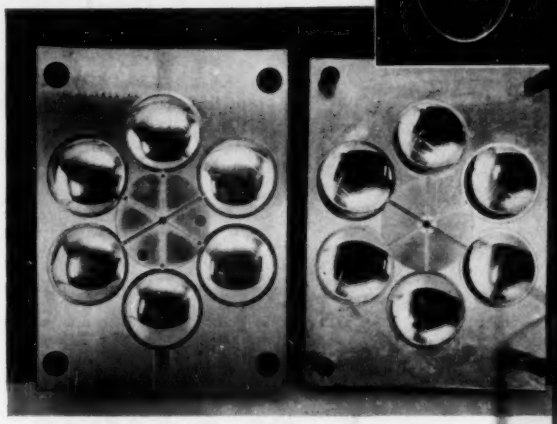
Reinhold Geiger Plastics, Los Angeles, Calif., produced a 10-cavity mold for a small heater control knob. Dale McDonald, plant superintendent of this company, states that, based on service to date, this mold can run a million parts or more if required. In the production of this mold, excellent hobbing and machining properties were required because it was necessary to use two hobbing operations and one machining operation. After the first push was made the hob was withdrawn and the impression on the angle of the cavity was machined off. A second hobbing operation produced the final raised letters in the cavities, bringing them up sharp and well defined.

Windman Bros., Los Angeles, Calif., used this new steel to make a 12-cavity transfer mold for pressure cooker handles. Each cavity was completed with one push. The molder states that this mold was made for an order of 5 million parts.

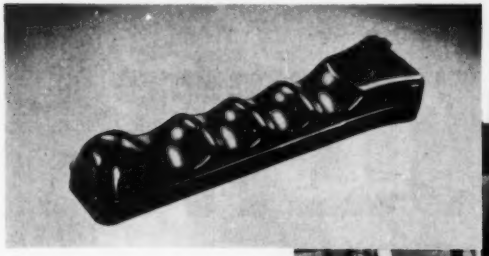
A multi-cavity mold for the Pal Razor Blade Co., to produce its new type blade dispenser was designed and built by Standard Tool Co., Leominster, Mass. Because of the intricacy of the cavities and the fragility of the hobs, only 300 tons of pressure was used in the hobbing operations and three pushes were required. However, the manufacturer claims that hobbing these cavities in any other type of steel would have been very risky and that the new steel undoubtedly saved time and money in costly experimenting. Commonwealth Plastics Co., Leominster, Mass., which is molding these parts, expects to produce many millions of the dispensers and for this reason required that the cavity be produced from a steel that would stand up without question over this long run.

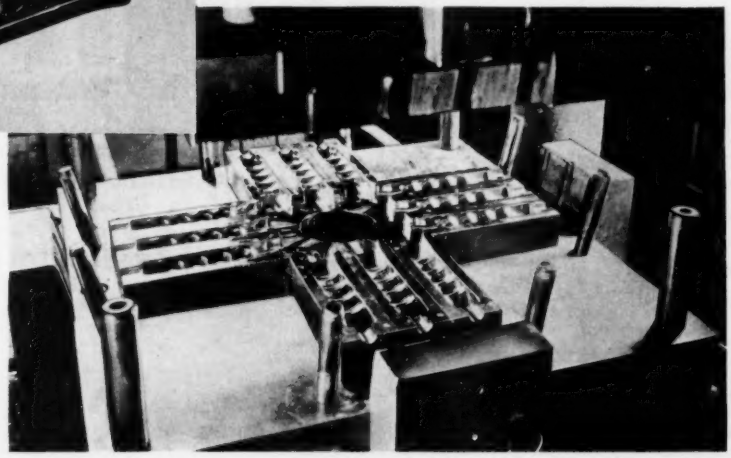
Although it has taken a relatively long period of time to develop and field test this new steel, The Carpenter Steel Co. reports that the results obtained indicate that a new and good tool has been placed in the hands of mold makers.





Six cavities of mold for producing clock crystals are machined and polished. No hobbing was required and polishing is said to have been reduced by 10 percent. Each cavity of this mold measures 5/8 in. deep by 3¾ in. in diameter





Each cavity in 12-cavity mold for pressure cooker handles was completed in one push. Mold was made to fill order for 5 million parts

To get the one

LIQUID PHENOLIC RESIN that will

do a better, more efficient job

for you at a lower cost—in drums

or tank car quantities...*write*

MARBLETTE

37-21 Thirtieth Street • Long Island City, N. Y. • ST 4-8100
CHICAGO • LOS ANGELES • TORONTO • HAVANA

Manufacturers of Cast and Liquid Phenolic Resins for two decades

Agricultural Residue Flours

As Extenders in Phenolic Resin Glues for Plywood

by R. V. WILLIAMSON* and E. C. LATHROP†

MANY agricultural residues are of potential interest as extenders in plywood glues but, with one exception, published data on their use for this purpose have not been previously available. The exception is English walnut shell flour, which is extensively used as a plywood glue extender.

Lignocellulose extenders for glues must be in the form of flour, which is expensive to produce by direct grinding of the raw materials. Corncobs,[1] nut shells, fruit pits, and some seed hulls[2] are being ground in increasing quantities for use as abrasives, soft-grit blasting,[3] polishing, and for various types of fillers. In the production of more coarsely ground materials some relatively fine material is always produced which can be reduced to a flour at much less cost. As the market for the more coarsely ground fractions from residues increases, the possibility of economically producing a variety of flours for use in glue, plastics, and other materials will be extended.

Flours from English and black walnut, pecan, and coconut shells and from corncobs are commercial articles, but little information is to be found on the grinding of agricultural residues. During a pilot-plant study of this problem, flours from several residues became available. Earlier reports[4,5] from this laboratory have dealt with the use of certain residue flours as extenders in phenolic plastics. This paper reports the evaluation of flours from 13 agricultural residues as extenders in phenolic resin glues for plywood.

*In charge, Plastics and Building Materials Section, Agricultural Residues Div.

†Head, Agricultural Residues Div., Northern Regional Research Laboratory, Peoria, Ill., one of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.

[1] "Corncobs—Their Composition, Availability, Farm and Industrial Uses," by E. C. Lathrop and J. H. Shollenberger, December 1947, Bulletin AIC-177.

[2] "Agricultural Residues—Chemical Analyses of Nut Shells, Fruit Pits and Seed Hulls," by O. H. Nelson, L. E. Talley, and S. I. Aronovsky. In press.

[3] "Soft-grit Blasting of Metals," by E. C. Lathrop and S. I. Aronovsky, Compressed Air Magazine 50, 208 (Oct. 1945).

[4] "Agricultural Residues in Plastics," by T. F. Clark, R. V. Williamson and E. C. Lathrop, Modern Plastics 23, 158 (Oct. 1945).

[5] "Agricultural Residues in Plastics. Part II. Plasticizers and Inorganic Extenders in 25-percent Phenolics," by R. V. Williamson, T. F. Clark, and T. R. Nafziger, Modern Plastics 23, 171 (Feb. 1946).

Preparation of agricultural residue flours.—The agricultural residues used in the experimental work were wheat straw, corncobs, flax shives, cottonseed hulls, rice hulls, English walnut, pecan, hard almond, soft almond, peanut, and apricot pit shells, and corncob lignin concentrate. The lignin concentrate was a byproduct from a hydrolyzation process, under investigation at this laboratory, for the conversion of corncobs to furfural and liquid fuels.

The grinding of the agricultural residues was accomplished by coarse grinding in a hammer mill, followed by further grinding in a double-disk attrition mill. The finely ground material was screened through a No. 200 U. S. Standard screen.

A limited number of experiments was made with more coarsely ground material in order to determine effect of particle size on strength and other properties of the glue.

Resins used.—A liquid phenol-formaldehyde resin, prepared in this laboratory, and three commercial resins were used in these experiments. The laboratory prepared resin had the same composition as that used by Babcock and Smith;[6] *i.e.*, a phenol-formaldehyde molecular proportion of 1:2.5, with 9 g. of sodium hydroxide per mol of phenol added as catalyst. The resin was condensed to produce a liquid with a consistency of x (Gardner-Holt bubble tube standard) or 12.9 poises. This degree of condensation was about as high as could be obtained without difficulty from gelation. The resin solution contained 52.8% of resin solids as determined by heating to constant weight at 105° C.

The commercial resins consisted of a liquid and a powdered phenol-formaldehyde resin and a liquid resorcinol resin.

Veneers used in plywood test panels—The veneer used in preparing the plywood test panels was aircraft-grade yellow birch, 1/16 in. in thickness. The

[6] "Extending Phenolic Resin Plywood Glues with Proteinaceous Materials," by Glen R. Babcock and Allan K. Smith, Ind. Eng. Chem. 39, 85 (Jan. 1947).

veneers were cut into 6-in. squares and stored at 73° F. and 50% relative humidity. Only veneers that were free from warping, cross grain, and other defects were used in preparing the plywood panels.

Preparation of glues.—Resin solutions, increasing in concentration from 20 to 50% in steps of 5%, were prepared from the liquid resin by diluting with water. To these resin solutions the individual agricultural residue flours were added in maximum amount consistent with satisfactory spreading properties and thoroughly mixed in a dough-type mixer. This procedure provided seven glues for each residue with different proportions of resin and residue flour. From each series of glues, the one that showed the greatest economy of resin combined with optimum strength was selected as the best composition for each residue.

Spreading glues and determination of amount of glue spread.—The glue was spread on the middle panel only, by means of a glue spreader having two corrugated rubber-covered rolls.

Experience showed that considerable error could be made in the determination of the amount of glue spread because of the changes in weight of the plywood panels that resulted from changes in atmospheric humidity. Therefore, care was taken to avoid errors from this source. The three veneers for each test panel, which were in equilibrium with the atmosphere of the constant temperature and humidity room, were assembled in this room and rubber bands placed at right angles around the veneers. The panels were weighed in the constant temperature and humidity room and placed in an air-tight container and taken to the pilot plant for spreading. The panels were taken individually from the container and the middle veneer was quickly spread with glue, excess glue wiped from edges, and the panel, with the rubber bands replaced, was returned to the container. They were returned to the constant temperature and humidity room and removed individually from the container for reweighing. The rubber bands around the panels held the top and bottom veneers in close contact with the glued surfaces of the middle veneer and prevented loss in weight that might have resulted from evaporation of moisture from the glue.

Pressing test panels.—The entire lot of spread panels was placed in a cold hydraulic press under a pressure of 200 p.s.i. for at least ½ hr. previous to hot pressing. This was done to insure uniform experimental conditions by preventing loss of moisture, equalizing moisture distribution between plies, preventing warping, and ensuring contact of surfaces of outer plies with the middle ply upon which the glue was spread. The individual panels were removed from the cold press and pressed in the hot press for 5 min. at 300° F. and 200 p.s.i. pressure.

Preparing and testing panels for strip shear strength.—The hot pressed panels were conditioned in the constant temperature and humidity room at 73° F. and 50% relative humidity for one week before cutting them into test specimens. Ten 6-in. square panels were prepared with each glue, which provided 30 specimens for the dry and 20 specimens for the 3-hr. boiling water strip shear tests. The test specimens were prepared and tested for strip shear strength in accordance with Army and Navy Specification AN-P-69a. The tests were made in the constant temperature and humidity room. The dry shear specimens had a moisture content of 5.5% at the time of testing.

(*Please turn to page* 169)

Table I.—Properties of Plywood Glues made with a Phenolic Resin and 200-mesh Agricultural Residue Flours

Agricultural residue	*None*	*Wheat straw*	*Cotton seed hull*	*Pecan shell*	*Corncob*	*Flax shives*	*Black walnut*	*Corncob lignin*	*Soft almond shell*	*Rice hull*	*English walnut*	*Apricot pit*	*Hard almond shell*	*Peanut shell*
Dry shear strength, lb.	538	556	555	547	561	586	576	573	520	582	611	591	544	600
Wet shear strength (3-hr. boil), lb.	484	406	404	444	420	424	440	414	438	422	429	402	438	467
Wood failure, dry, percent	40	41	48	48	75	63	54	66	55	79	75	88	53	62
Wood failure, wet, percent	74	79	63	82	80	79	96	74	63	88	100	99	94	77
Spreading properties[a]	E	E	E	F	F	E	F	G	E	G	F	E	F	E
Concentration of resin solution, percent	45	30	25	35	25	30	35	30	35	30	30	35	35	30
Parts resin solution to 1 of filler	.....	6.0	5.5	5.0	4.5	7.5	4.0	4.0	5.3	4.0	4.8	4.5	7.0	8.5
Parts dry resin to 1 of filler	.....	1.8	1.4	1.8	1.1	2.3	1.4	1.2	1.9	1.2	1.4	1.6	2.5	2.6
Glue spread per 1000 sq. ft. of single glue line, lb.	22.2	20.1	26.1	20.3	29.5	23.0	22.7	26.8	21.9	27.4	27.0	27.4	25.6	29.3
Resin solids spread per 1000 sq. ft. of single glue line, lb.	10.0	5.2	5.5	5.9	6.0	6.1	6.4	6.4	6.4	6.6	6.7	7.8	7.9	7.9
Flour spread per 1000 sq. ft. of single glue line, lb.	.....	2.9	4.1	3.4	5.4	2.7	4.5	5.4	1.9	5.5	4.7	5.0	3.2	3.1
Total solids spread per 1000 sq. ft. of single glue line	10.0	8.1	9.5	9.3	11.4	8.8	10.9	11.8	8.3	13.1	11.4	12.8	11.1	11.0
Saving in resin, percent	.....	48	45	41	40	39	36	36	36	34	33	22	21	21

[a] Code for spreading properties: E = Excellent; G = Good; F = Fair or usable.

MOSINEE

"More than Paper"

MOSINEE offers the plastics industry dependably uniform paper-base processing materials with scientifically controlled chemical and physical properties . . . high tensile and tear strength with high absorptive capacity . . . or other properties, with *dependable uniformity.*

MOSINEE can give you technical characteristics engineered to meet your specific plastics production requirements. If you have a problem involving paper, write Dept. MP.

MOSINEE PAPER MILLS COMPANY • MOSINEE, WIS.

Essential Paper Manufacturers

Nylon as a Bearing Material*

by DR. RUSSELL B. AKIN†

NYLON as a plastic molding material is finding a steadily increasing number of industrial applications, as for gears and bearings. Despite a chemical resemblance, the plastic types of nylon are not fibrous like the textile forms. A dozen types of nylon are now in commercial production as plastic molding powders. For most mechanical purposes, the nylon designated FM-10001 is used; this type is the most rigid, has the highest softening temperature, and also is the least expensive. This type of nylon is handled by the injection molding process, and many custom molders are experienced in handling this material. Bearings may be molded to shape, or blocks may be molded for machining where the number of pieces is not great enough to warrant molds of special shapes. Nylon has a number of special properties which are important factors in its use for bearings.

Low coefficient of friction—The static coefficient against polished steel is less than 0.15. Data on the dynamic coefficient of friction indicate considerable variation with the conditions of test. Where the application is satisfactory for long life, the measured coefficients have ranged from 0.20 down to as low as 0.04.

Ability to be used without lubrication—It is frequently possible successfully to operate nylon bearings with little or no lubrication. When speed and load combinations are such that excessive frictional heat is not produced within the bearing, the use of lubricants can be avoided. This characteristic is of particular importance in the textile field, long plagued by the problem of oil spots. Under more rigorous conditions lubrication is required, and frequently water is an adequate lubricant. Motor oils do not affect nylon at temperatures as high as 325° F., nor are oils adversely affected by nylon, as demonstrated by the SAE Underwood test.

Tolerances are somewhat less critical than with metal bearings—Because of its resilience, nylon has the ability to deform elastically at points where stress is concentrated, thus distributing the load over a large area. The plastic recovers its original shape when the load is removed unless the load has been quite heavy. With heavy loading a nylon bearing surface tends to glaze as it is subjected to wear and thus develops a very smooth surface conforming to irregularities in the shaft. The small clearances normally specified for rigid metal bearings are not only unnecessary but inadvisable with nylon. Our general recommendation is that nylon bearings operate with a clearance of 0.006 in. per in. of diameter.

Abrasion-resistance—The abrasion resistance of nylon is outstanding among homogeneous plastics. Nylon yields slightly at the surface but shows very small wear. The load-carrying ability and temperature range are approximately those of Babbitt with considerably better abrasion resistance. Nylon bearings tested in the presence of sand have out-worn metal bearings because the particles of sand actually embedded in the nylon, the craters smoothed over, and the bearing surface remained essentially intact.

Ability to be injection molded—The large scale production of nylon bearings by injection molding permits economies in manufacture, resulting from the elimination of costly machining necessary in the manufacture of bearings from other materials. Nylon is a high-melting material, which melts rather sharply to yield a fluid mass. During the injection molding operation, this material is forced into a cavity where it rapidly sets up into a solid form. The speed of setting is such that a definite advantage is gained even over such rapid machine operations as are performed on the normal screw machine. Because of its fluidity at molding temperature, nylon can be molded in sections as thin as 0.005 to 0.008 inch.

Test program

In the Du Pont company, tests of nylon bearings were made in the Almen and Timken machines, showing nylon to be promising. More specific recommendations as to load, speed and lubrication were required. In an effort to determine limiting conditions for use of nylon bearings, the Du Pont company recently initiated a project at an outside industrial research laboratory specializing in such mechanical studies. The initial phase of this project has been completed but much work remains to be done.

Data are being acquired on systems where nylon runs against nylon, against cold rolled steel, and against brass; each of these pairs is being studied dry, lubricated with distilled water (or water with neutral potassium dichromate to minimize corrosion) and lubricated with SAE 10 or SAE 30 oil.

The equipment used in these studies is a Neely bearing tester, and sleeve bearings driven by vari-

*Presented at the 1948 Annual Meeting of the American Society of Mechanical Engineers before the Rubber and Plastics Div., and published here through the courtesy of that Society, with additional material.
†Plastics Dept., E. I. du Pont de Nemours & Co., Inc.

FOR YOUR CONVENIENCE AND EASY IDENTIFICATION

we are now designating our Quality Line of Plasticizers as

"ELASTEX" PLASTICIZERS

BARRETT "ELASTEX" DCHP PLASTICIZER
(Dicyclohexyl Phthalate)

Color	White
Form	Granules
Odor	Moderate aromatic
Acidity (as Phthalic Acid), %	0.10 Maximum
Saponification Number	335-345
Melting Point, °C.	62-65
Containers	Fibre drums containing approximately 230 pounds net.

BARRETT "ELASTEX" 10-P PLASTICIZER
(Diisooctyl Phthalate)

Color	Clear, 100 Hazen Maximum
Form	Liquid
Odor	Characteristic
Acidity (as Phthalic Acid), %	0.01 Maximum
Specific Gravity, 20/20° C.	0.984 ±0.005
Saponification Number	280-290
Cloud test for water	Clear at 0° C.
Containers	50-55 gal. non-returnable steel barrels.

BARRETT "ELASTEX" 50-B PLASTICIZER

Color	Clear, practically water-white (50 Hazen maximum)
Form	Liquid
Odor	Mild Ester
Distillation at 5 mm. Hg, °C.	189-222
Specific Gravity, 25/25°C.	1.076
Pounds per Gallon at 25°C.	8.95
Refractive Index at 20°C.	1.5071
Viscosity, Centipoises	467 at 5°C., 87.0 at 25°C., 22.8 at 50°C.
Containers	50-55 gal. non-returnable steel barrels.

BARRETT* CHEMICALS *Available* TO THE PLASTICS INDUSTRY

Dibutyl Phthalate
"ELASTEX" DCHP Plasticizer
"ELASTEX" 10-P Plasticizer
"ELASTEX" 50-B Plasticizer
Phthalic Anhydride
Phenol
Cresols
Cresylic Acids
Toluol

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.
In Canada: The Barrett Company, Ltd.,
5551 St. Hubert St., Montreal, Que.

able speed motors with predetermined loads on these bearings. These tests still continue and the following data should be considered only as preliminary and possibly to be modified by succeeding work.

Results with Neely bearing tester

Neely bearing tests are operated at boundary film lubricating conditions. It was found that sharp edges customary in steel specimens cut the nylon severely; these edges were slightly relieved, and consistent wear data were obtained.

With SAE 10 oil at 125° F. as lubricant, nylon was run on cold-rolled steel at 1550 p.s.i. and 156 ft./min. The coefficient of friction at the start was 0.103, and fell off to 0.080 at the end of 19-hr. runs. At half-hour intervals, measurements were made of the coefficient of friction and of the amount of wear. During the first half-hour, the wear of nylon was 0.0009 in.; during the second, 0.0006 in.; during the next period it was immeasurably small; over a 19-hr. period, the wear averaged 0.0004 in. per half hour.

With distilled water as lubricant, the load was reduced from 1550 p.s.i. with oil to 1050 p.s.i. The coefficient of friction at the start of the water run was 0.556 and at the end of an hour was 0.676; the wear was greater than with oil lubrication, despite running of the water tests at ⅔ of the oil load. Wear and friction in the case of water was excessive.

In examining the water lubricating bath after the test was completed, the appearance was milky. It was thought that the considerable amount of nylon debris might be responsible for the excessive wear. To determine whether that were the case, short tests were made, comparing debris-laden water with a continuous stream of clean water. At 1550 p.s.i., debris-laden water gave a coefficient of 0.304 and a wear of 0.0434 in. per half hour; clean water at 170 ml. per min. gave a coefficient of 0.096 and a wear of 0.00015 inch. At 1050 p.s.i. the comparison was similar.

From these Neely data, the following tentative conclusions were drawn: 1) nylon to nylon is best in each of the lubricant conditions; 2) steel on nylon is nearly as good as nylon on nylon; 3) increase in speed sixfold above original test range of 156 ft./min. has no significant effect; and 4) limiting loads appear to be: oil 1550 p.s.i.; water 1050 p.s.i.; none 550 p.s.i.

It should be noted that the load carrying capacity of the surface in the Neely test may be high because these surfaces are in contact less than 10% of the time. This gives some opportunity for cooling, or for relaxation of strain. Swelling or deformation of test specimens is not a factor since the machine adjusts for the deviation. It is highly questionable whether the Neely test data can be extrapolated to sleeve bearing behavior.

As expected, in actual sleeve bearings where a metal journal is used, heat is conducted away from the nylon bearing surface so that a metal-to-nylon bearing may be better than a nylon-to-nylon contact. Where lubrication was ample, nylon to brass showed poorer results than the other two pairs because the brass used showed some flaking of small brass particles. These embedded in the resilient nylon and scored the brass shaft. In most tests, brass behaved about the same as steel; in the more severe tests, the brass results seemed confused by the flaking action. Hence, pending collection of further data the brass results are not here discussed in detail.

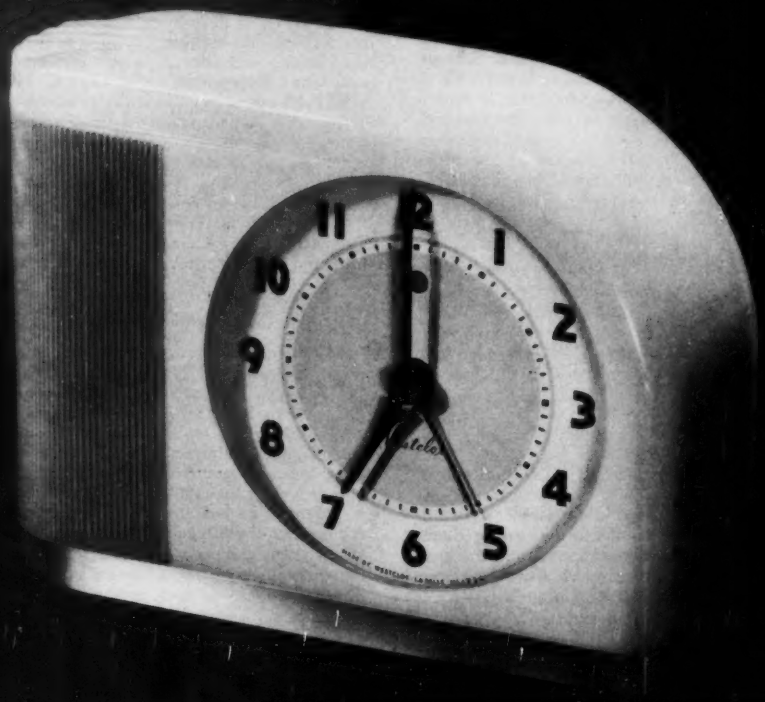
Sleeve bearing tests were set up with electric motors whose speed could be varied from 180 to 2500 r.p.m.; at 300 r.p.m., the linear speed at the bearing interface was 100 ft./min. Diametral clearance was set at 0.010 in., bearing 1.25 in. inside diameter and 1.500 in. outside diameter. Weights were attached to the bearing housing to give predetermined unit loads. Shaft smoothness was 8 to 15 micro inches.

Under these conditions, at a bearing load of 8 p.s.i., a steel shaft and nylon bearing showed no increase in friction during 500 hr.; at 12 p.s.i. the same was true. At 8 p.s.i., a nylon shaft on nylon bearing lasted indefinitely, with no build-up of friction. At 12 p.s.i., the nylon-to-nylon pair seized after 17 hr., obviously due to overheating. On the sleeve tests, within the range of speeds covered, speed had no effect on load capacity or wear.

To explore the effect of temperature, another series of sleeve bearing tests was run with a brass shaft. Lubricant was SAE 30 motor oil, diametral clearance 0.010 in., bearing 1.25 in. inside diameter and 1.500 in. outside diameter. A speed of 175 ft./min. and a load of 40 p.s.i. gave an equilibrium oil temperature of 160° F. No seizure was encountered after 50 hours. When the load or speed was increased to bring the oil temperature to 200° F., bearing seizure was encountered. This was apparently due to thermal expansion of the nylon. Since the outside diameter of the nylon sleeve was confined, the expansion forced a reduction in the inside diameter of the sleeve. The nylon sleeve had been press-fitted into the steel housing with an interference fit of 0.0025 inch. These tests with a brass shaft showed some shredding of brass, embedment of brass particles in nylon, and scoring of journal.

Using a steel shaft instead of brass, it was possible to raise the load from 50 to 80 p.s.i., and the speed from 175 to 330 ft./min. before the oil temperature became 160° F. At least 75 hr. under such conditions was satisfactory. When the load was further increased to 120 p.s.i., failure occurred inside of 30 min. and the temperature rose to 200° F. The nylon sleeve had seized on the shaft. After cooling, the sleeve was no longer retained by the holder because of thermal contraction. (*Turn to page* 174)

enlightened clock case



Westclox Moonbeam Electric Alarm manufactured by Westclox Div. of General Time Corp., LaSalle, Ill. Tenite case molded by Chicago Molded Products Corp., Chicago.

Hidden in one end of the Tenite case of this electric alarm clock is a light bulb which flashes a series of signals through the translucent plastic prior to an audible alarm. Vertical ridges molded on the inner surface of the case concentrate the light in the direction of the sleeper.

Tenite lends itself to the modernization of many products. It provides color in a variety of forms, such as translucent, transparent, crystal, variegated, and opaque. It can be molded into practically any shape and often requires no finishing operations beyond assembly. Tenite is an excellent material for housings because of its extreme toughness, dimensional stability, natural luster, and permanent finish.

Other products which have been brought up to date in Tenite are bathroom scales, electric fans, knife racks, and vacuum sweepers.

For more information about the properties and uses of Tenite, write TENNESSEE EASTMAN CORPORATION (Subsidiary of Eastman Kodak Company), KINGSPORT, TENNESSEE.

TENITE

an Eastman Plastic

Information regarding Tenite is obtainable through representatives located in Chicago, Cleveland, Dayton, Detroit, Leominster (Mass.), Los Angeles, New York, Portland (Ore.), Rochester (N. Y.), St. Louis, San Francisco, and Seattle; and elsewhere throughout the world from Eastman Kodak Company affiliates and distributors.

PLASTICS DIGEST*

Abstracts from the world's literature of interest to those who make or use plastics or plastics products. Send requests for periodicals to the publishers listed

General

PREPARATION AND PROPERTIES OF N-METHYLOL, N-ALKOXYMETHYL, AND N-ALKYLTHIOMETHYL POLYAMIDES. T. L. Cairns, H. D. Foster, A. W. Larchar, A. K. Schneider, and R. S. Schreiber. J. Am. Chem. Soc. *71*, 651-5 (Feb. 1949). The preparation and properties of representative examples of N-methylol, N-alkoxymethyl, and N-alkylthiomethyl polyamides by the treatment of linear polyamides with formaldehyde in the presence of acids or bases, or with formaldehyde and alcohols or mercaptans in the presence of acids, respectively, are described.

Materials

BIBLIOGRAPHY OF LAMINATING PROCEDURE AND PRACTICE. SPE J. *5*, 9-29 (May 1949). A bibliography of laminating procedures and practices is presented under seven main headings: type of resin, applications, fabrication and finishing, fillers, testing and properties, manufacturing, and reviews.

APPLICATIONS FOR ALKYDS AND POLYESTERS. E. M. Beavers. Ind. Eng. Chem. *41*, 738-40 (Apr. 1949). Ester resins are used in large quantities for a multitude of applications. Properties and performance can be adjusted over broad ranges, depending on the choice of raw materials used in the manufacture of the products. The majority of the present applications are in the general field of protective and decorative coatings. Linear polyesters, particularly, show potentialities also as elastomers, fibers, lubricants, and molding powders.

Applications

AUTOMOTIVE END-USE SPECIFICATIONS. J. K. Totten. SPE News *5*, 8 (Feb. 1949). A list of requirements for plastic automotive parts is given.

STERILIZATION OF CATION EXCHANGE RESINS. G. A. Cruickshank and D. G. Braithwaite. Ind. Eng. Chem. *41*, 472-3 (Mar. 1949). Cation exchange resins of the sulfonated phenol-formaldehyde type can be successfully sterilized by treatment with 0.25% formaldehyde applied for a period of 3 hours. It is suggested that such sterilization be carried out just before regeneration of the exchanger since every trace of the sterilizing agent is removed during the normal regeneration cycle.

SQUEEZE-TUBE FOR NASAL SPRAY. Modern Packaging *22*, 97-9, 175-6 (May 1949). A tube from which a nasal spray is administered directly by squeezing is made of polyethylene.

MEAT-FILM CONSIDERATIONS. N. Allen. Modern Packaging *22*, 134-7 (Jan. 1949). The properties of plastic film needed to package meats satisfactorily are discussed. For the commercial packaging of meats in transparent flexible packaging materials, a film having a water-absorptive surface and a low water-vapor permeability is indicated for fresh meats. This film should be heat-sealing for convenient operation and should be resistant to the action of liquids and high humidities. The films should maintain satisfactory color in fresh meats. When used with a wettable surface in contact with the meat and when temperatures are kept at 34° F. or lower, MSAT-80 maintains the color satisfactorily for 72 hr. or longer. In packaging prepared and cured meats, a film of higher degree of water-vapor permeability is indicated. This film should also be heat-sealing for convenient use and should be resistant to liquids and high humidities. Transparent flexible films meeting the above specifications are being used successfully for the packaging of fresh meat and for the packaging of prepared and cured meats throughout the country.

Properties

ADHESION OF POLYMERS TO CELLULOSE AND ALUMINUM. A. D. McLaren and C. J. Seiler. J. Polymer Sci. *4*, 63-74 (Feb. 1949). A relationship between tack temperature and molecular weight is deduced and illustrated with polyvinyl acetate polymers. Provided the molecular weight is high enough to prevent cohesive failure, the adhesion of polyvinyl acetate to cellulose and aluminum is independent of molecular weight. The influence of polymer composition on adhesion is illustrated with copolymers of vinyl acetate and methyl vinyl ketone and with styrene and methyl vinyl ketone. Above a mol fraction of ketone of 0.8, adhesion increases rapidly. The interdependence of tack temperature and composition on adhesion is exemplified with ethylene-vinyl chloride copolymers. A temperature dependence of adhesion is cited for copolymers containing maleic acid.

Chemistry

ACTION OF REGULATORS IN POLYMERIZATION OF MONOMERS CONTAINING ALLYL AND METHACRYLATE GROUPS. S. G. Cohen and D. B. Sparrow. J. Polymer Sci. *3*, 693-703 (Oct. 1948). The peroxide-initiated polymerization of allyl methacrylate was studied in the presence of certain additives. By the use of mercaptans and diisopropyl dixanthogen the extent of polymerization at the point where gelation occurs may be extended from about 6% to 20-30% polymerization. Examination of samples of polyallyl methacrylate, polymethyl methacrylate, and the copolymer of methyl methacrylate and allyl chloroacetate indicates that the postponement of gelation results largely from diminution of the molecular weight by the regulators. The effects of regulators on the composition of copolymers and the molecular weight of polymers, and the relation between molecular weight and extent of reaction at the gel point are discussed.

HEATS OF COPOLYMERIZATION. L. K. J. Tong and W. O. Kenyon. J. Am. Chem. Soc. *71*, 1925-29 (June 1949). The copolymerization of vinyl acetate and isopropenyl acetate with certain difficulty homopolymerizable unsaturates to produce copolymers of substan-

*Reg. U. S. Patent Office.

You can always tell THERMEX high frequency heating apparatus for plastics by the sliding drawer heating compartment. The ease, simplicity, dependability embodied by this feature is the result of experience. THERMEX pioneered in high frequency heating apparatus for plastics. THERMEX performance claims are based on successful installations. For the practical facts about what high frequency heating can do to make plastics molding more profitable, write to The Girdler Corporation, Thermex Division, Louisville 1 Kentucky.

Thermex RED HEADS

THERMEX and RED HEAD *T. M. Reg. U. S. Pat. Off.*

Plastics Scrap

• bought
• sold
• reworked

Custom regrinding, compounding and coloring

cellulose acetate
butyrate
polystyrene
methyl methacrylate
polyethylene
polyvinyl resins
ethyl cellulose
nylon

VINYL AND POLYETHYLENE FOR EXTRUSION • INJECTION • CALENDERING

A. BAMBERGER
CORPORATION
44 Hewes Street, Brooklyn 11, N. Y.
Phone: ULster 5-3887
CABLE: CHEMPROD BROOKLYN

tially alternating monomeric units was studied. Vinyl acetate appears to copolymerize preferentially in an equimolar ratio with the second monomer until the latter is exhausted, then the residual vinyl ester homopolymerizes. The observed heats of copolymerization in kcal./mol for the equimolar systems investigated are: vinyl acetate/diethyl fumarate 18.6; vinyl acetate/diethyl maleate 20.0; vinyl acetate/maleic anhydride 20.2; and isopropenyl acetate/maleic anhydride 17.8. After allowance is made for the heat of isomerization of fumaric and maleic esters, a small difference in their heat of copolymerization with vinyl acetate was observed which, if real, may be due to isomeric arrangement of substituent groups along the main skeletal chain.

Testing

HISTORY OF HARDNESS TESTS BASED ON SCRATCH RESISTANCE MEASUREMENTS. E. C. Bernhardt, ASTM Bulletin No. 157, 49-53 (Mar. 1949). This is an historical review; 14 references.

WVP AT 0° BY HYGROMETRIC SWEEP-GAS METHOD. W. A. Wink and L. R. Dearth. Modern Packaging *22*, 134-8, 188, 190, 192 (May 1949). A new method is described for measuring water vapor permeability. This is a sweep-gas method which uses super-sensitive electric hygrometers. It is particularly useful at low temperatures.

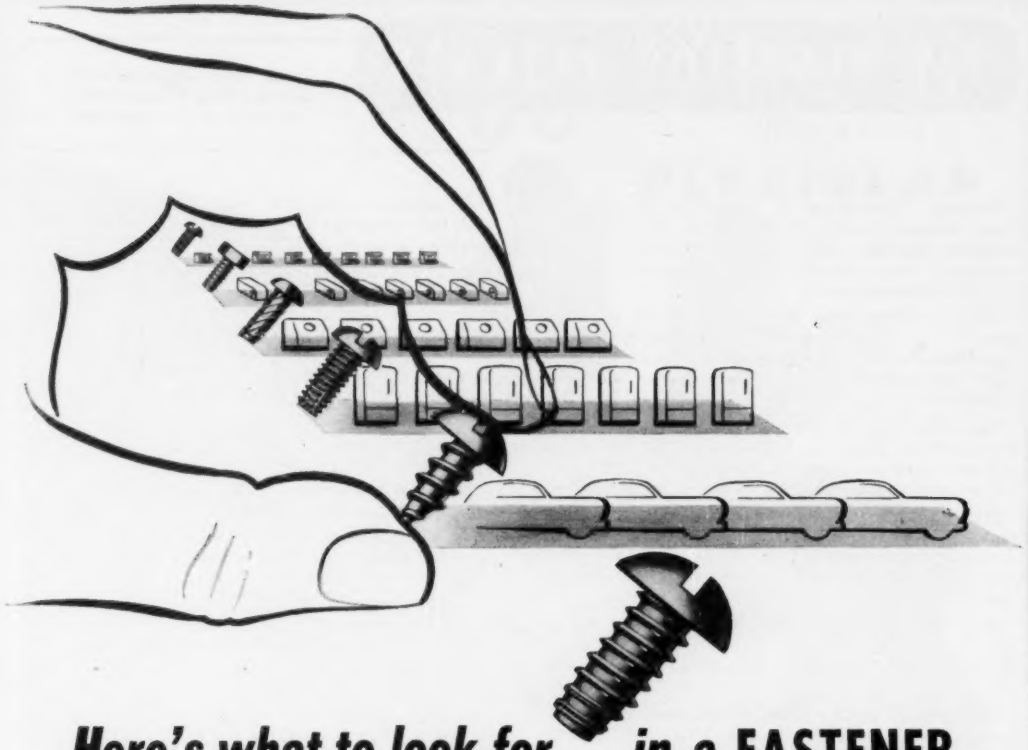
SIMPLE CALORIMETER FOR SPECIFIC HEAT MEASUREMENTS. R. B. Rice. ASTM Bulletin No. 157, 72-5 (Mar. 1949). A simple, inexpensive, and easily operated calorimeter for the measurement of specific heat of powdered solids, particularly plastics, is described. It is also adapted to the measurement of the heat capacity of liquids. It permits a determination with an accuracy of approximately 1% in a period of about 20 minutes.

APPARATUS FOR AUTOMATIC UNIFORM CONTROLLED RISE OF TEMPERATURE. V. C. Taxwood and C. R. Stock. ASTM Bulletin No. 157, 76-7 (Mar. 1949). An apparatus which has been used successfully for several years as part of an instrument for determining the heat distortion temperature of plastics according to A.S.T.M. specification is described. With proper choice of variable autotransformer, heaters, suitable insulation, and rate of drive, a wide range of requirements can be encompassed by this type of control.

COATINGS. T. G. Rochow and R. W. Stafford. Analytical Chem. *21*, 196-202 (Feb. 1949). Recent developments in the analysis and identification of organic coating materials are reviewed; 108 references.

NATURAL AND SYNTHETIC RUBBERS. N. Bekkedahl and R. D. Stiehler. Analytical Chem. *21*, 266-78 (Feb. 1949). Recent developments in the analysis and identification of natural and synthetic rubbers are reviewed; 245 references.

STUDIES ON RESINS. W. Sandermann. Analytical Chem. *21*, 587-9 (May 1949). A new specific intensive blue-violet color reaction which is used to detect dehydroabietic acid in various resin products is described. A resin containing dehydroabietic acid is sulfonated in the cold, and after standing 12 hr. at room temperature is neutralized with concentrated sodium hydroxide or potassium hydroxide. A blue-violet color appears; the intensity varies with the amount of dehydroabietic acid in the sample.



Here's what to look for in a FASTENER

to cut your assembly costs

Ask yourself, first, can you *use* a Self-tapping Screw? Many thousands of manufacturers are saving as much as 50% in assembly work-hours today with this simpler, speedier fastening method. Tapping, riveting, nut-running, inserts in plastics—work-slowing operations which add needlessly to production costs—are completely eliminated.

Then, consider the maker. For the *real* economy of Self-tapping Screws is in their *application*. Parker-Kalon, *originators* of this type of fastener, and *specialists* in its manufacture, alone can offer the wealth of information 35 years of experience represents.

What's more, with a complete line of Self-tapping Screws for every metal and plastic assembly, the advice of a Parker-Kalon Assembly Engineer is unbiased. Parker-Kalon, in brief, *fits the screw to the job.* That's why, 7 out of 10 times, manufacturers can look for substantial savings in assembly costs with P-K Screws.

CALL IN A P-K ASSEMBLY ENGINEER. Very likely he can help simplify your assemblies, save time and cut production costs with the simpler, operation-saving Parker-Kalon fastening method. If you prefer, mail assembly details for recommendations. Parker-Kalon Corp., 200 Varick St., New York 14, N.Y.

REMEMBER...IF IT'S P-K®...IT'S O.K.!

P-K® *The Original*

PARKER-KALON SELF-TAPPING SCREWS

FOR EVERY METAL AND PLASTIC ASSEMBLY

OTHER P-K PRODUCTS: Cold-Forged Socket Screws, Wing Nuts, Thumb Screws • Hardened Screwnails and Masonry Nails • Shur-Grip File and Solder Iron Handles • Metal Punches • Damper Regulators and Accessories

U.S. PLASTICS PATENTS

Copies of these patents are available from the U. S. Patent Office, Washington, D. C., at 25¢ each.

MOLDING COMPOSITION. F. Rosenthal (to Univ. of Tenn. Research Corp.). U. S. 2,470,322, May 17. Thermosetting molding composition comprising phenol-formaldehyde resin, cottonseed hulls, and cooked oil-extracted cottonseed meal.

MOLDING COMPOSITION. R. A. Barkhuff, Jr. (to Monsanto). U. S. 2,470,329, May 17. An acid-resistant molding composition comprising asphalt mixed with cellulosic fiber impregnated with styrene-maleic anhydride copolymer.

SCRAP RECOVERY. I. Miller and A. L. Beiser (to Gem Participations, Inc.). U. S. 2,470,361, May 17. Vinyl polymer scrap is pyrolyzed under vacuum while immersed in a stable volatile liquid heat transfer medium.

MELAMINE-FORMALDEHYDE. H. W. Mohrman (to Monsanto). U. S. 2,470,363, May 17. Melamine-formaldehyde casting resin is prepared by heating polymethylol-melamine, raising the pH to 7.7 to 8.3, and dehydrating by vacuum distillation.

MOLDING COMPOUNDS. E. Glycofrides (to Owens-Illinois). U. S. 2,470,393, May 17. Reacting urea, formaldehyde, sodium hydroxide, lignocellulose, pigment, and zinc stearate, and milling to produce molding powder.

POLYMERS. C. F. Van Gilder (to Standard Oil Development). U. S. 2,470,447, May 17. Mixing an isoolefin and a polyalkylated phenol and polymerizing in the presence of a Friedel-Crafts catalyst.

TANNING. W. Windus (to John R. Evans and Co.). U. S. 2,470,450, May 17. Tanning by submerging a tannable skin in dilute aqueous solution of melamine and formaldehyde.

POLYSILOXANE RESINS. C. S. Ferguson and C. E. Welsh (to G. E.). U. S. 2,470,479, May 17. Polysiloxane resin prepared by adding water to a polyether solvent solution of methyl trichlorosilane in amount to partially hydrolyze, adding dimethyldichlorosilane, and finally completely hydrolyzing.

PROLAMINES. L. D. Myers and J. D. Fitzpatrick (to Emery Industries). U. S. 2,470,515, May 17. Zein plasticized with the reaction product of a higher unsaturated nitrile and a chromic acid oxidizing solution.

CONDENSATES. M. W. Harman (to Monsanto). U. S. 2,470,555, May 17. Heating a mercapto thiazole with formaldehyde and ammonia.

ORGANOSILOXANES. J. F. Hyde (to Corning Glass). U. S. 2,470,562, May 17. Method of preparing organosiloxanes.

POLYMERS. G. S. Schaffel (to Western Electric). U. S. 2,470,651, May 17. Liquid coating comprising a volatile solvent and a polyester prepared by heating a dihydric alcohol and resorcinol diacetic acid in the presence of a catalyst.

FASTENING. P. C. Roche (to National Organ Supply). U. S. 2,470,723, May 17. A flexible plastic fastening.

INTERPOLYMER. E. G. Bobalek (to Arco). U. S. 2,470,752, and 2,470,757 May 24. Interpolymer of an ungelled vinyl aromatic compound, a monocarboxylic olefinic acid, and a drying oil with a polyhydric alcohol and a polybasic organic acid.

VINYL POLYMERS. M. Baer (to Monsanto). U. S. 2,470,908-9-10-11, May 24. Vinyl halide is dispersed in aqueous medium having dissolved therein a heteropolymer of vinyl acetate and maleic acid and also dissolved therein an alkyl phthalate, a glycol ester of a fatty acid, a phosphoric acid ester of an hydroxy benzene, or a heteropolymer of vinyl methyl ether and maleic anyhdride.

PLASTIC WINDOW. A. B. Dow. U. S. 2,470,921, May 24. A window of flexible plastic overlapping panes.

BUTTON ATTACHMENT. B. A. Weyl. U. S. 2,470,963, May 24. Method for heat sealing plastic buttons onto fabric.

INFLATED ARTICLES. F. H. Kennedy. U. S. 2,470,990, May 24. Method for making fluid-containing articles from heat sealable plastic sheet.

LINEAR POLYESTERS. J. G. Cook, J. T. Dickson, A. R. Lowe, and J. R. Whinfield (to I.C.I.). U. S. 2,471,023, May 24. Linear polymers of hydroxyalkyl benzoic acid.

UREA RESINS. R. W. Auten (to Rohm and Haas). U. S. 2,471,188, May 24. A thermosetting resinous product containing disubstituted aminoalkoxy groups obtained by condensing urea and an aldehyde and etherifying the resulting alkylol with a disubstituted amino alcohol.

RESINS. C. H. McKeever (to Rohm & Haas). U. S. 2,471,230, May 24. A fusible organic solvent-soluble resinous reaction product of an alkylene primary diamine and the residue of vacuum distillation of castor oil treated with alkali.

CONDENSATE. J. B. Rust (to Montclair Research and Ellis-Foster). U. S. 2,471,243, May 24. A resinous condensate of an aldehyde and a polycyanoacetamide.

VINYL POLYMERS. E. W. M. Fawcett, E. S. Narracott, and K. J. Rowland (to Anglo-Iranian Oil). U. S. 2,471,266-7, May 24. Vinyl polymers plasticized with airblown extracts of mineral oil fractions or sulfur treated extracts of mineral oil fractions.

CELLULOSE ETHER. G. W. Hooker and N. R. Peterson (to Dow). U. S. 2,471,272, May 24. A composition of a water-soluble cellulose ether and a cyclo-methylene sulfone.

MOLDING. G. E. Henning (to Western Electric). U. S. 2,471,324, May 24. Screw-feeding apparatus for advancing plastic material in extrusion molding.

FURFURYL ALCOHOL. P. L. McWhorter (to Haveg). U. S. 2,471,438, May 31. Controlling rate of polymerization of furfuryl alcohol by regulating addition of acid catalyst.

PLASTICIZERS. A. D. F. Toy (to Victor Chemical). U. S. 2,471,463, May 31. Dialkyl phenylphosphates as plasticizers for plastic materials.

BONDING. R. P. Roberts and K. Jones (to Celanese). U. S. 2,471,497, May 31. Applying to surfaces of cellulosic material, polyvinyl alcohol, formaldehyde, and hexa-

TO DEMONSTRATE THE "88" ...OLDSMOBILE Chooses PLEXIGLAS

Through this crystal clear PLEXIGLAS hood, customers have an undistorted view of Oldsmobile's important new power plant. Hoods are formed from 67" x 79" sheets of ¼" material to the exact contour of the standard part. The surface of the acrylic plastic gleams like the lustrous finish of the body. Fabricated by Steiner Plastics Mfg. Co. and Ranger Tennere, Inc., distributed by Plastics Unlimited for Oldsmobile dealers throughout the country.

You're looking at Oldsmobile's new "Rocket" engine through optically clear PLEXIGLAS acrylic plastic. To display—with protection—its "88" model's power plant, Oldsmobile chose PLEXIGLAS transparent hoods for showroom and demonstrator models.

Rigorous road tests over General Motors' famed proving grounds showed PLEXIGLAS entirely suited to this critical job. Light, strong, shatter-resistant PLEXIGLAS passed the severe tests without damage. As a result, transparent PLEXIGLAS hoods have been installed on thousands of Oldsmobiles for both showroom and operational use.

Something *you* make or merchandise can be better displayed, beautified, or safeguarded by PLEXIGLAS. Its great strength and durability; ease of forming and machining; crystal clarity; wide range of colors; and ability to withstand outdoor exposure make PLEXIGLAS practical and economical for scores of applications.

For suggestions on the uses and advantages of PLEXIGLAS in architecture, signs and displays, lighting, transportation, safety, manufacturing or any special field, write for free literature today. Be sure to specify your field of interest—and ask for samples.

Canadian Distributor: Crystal Glass & Plastics, Ltd., 282 St. Helens Avenue, Toronto, Ontario

PLEXIGLAS is a trade-mark, Reg. U.S. Pat. Off. and in principal foreign countries.

CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

ACE gives you Ace-High Quality in PLASTIC BALLS

COMPLETELY SEAMLESS
PRECISION FABRICATED
- All sizes (⅛" to 1¾")
- All plastic materials
- A wide variety of colors

Write today for Color Bulletin and Samples

Complete facilities for fabricating plastic parts for all industries. Estimates submitted promptly upon receipt of your blueprints or specifications.

ACE PLASTIC COMPANY
Precision Plastic Fabricators

91-18 Van Wyck Blvd., Jamaica 1, N. Y.

DETECTO SCALES

There's a precision-accurate Detecto Scale for your specific weighing and counting need. The Detecto helps increase production, yet assures you maximum accuracy by making slightest weight discrepancies immediately visible.

DETECTO-GRAM
HIGH ACCURACY SCALE

Another Detecto-Gram Scale for your precision weighing jobs. Use this Detecto-Gram Super Sensitive Model #74-02 where hair-line accuracy is essential, where an error in the smallest fraction of an ounce may affect your profit.

Write for Literature

DETECTO · SCALES · INC.
MAKERS OF FINE SCALES SINCE 1900
540M PARK AVENUE · BROOKLYN 5, N. Y.
SCALE ENGINEERS IN ALL PRINCIPAL CITIES

methylenetetramine, bringing the surfaces together, and heating to acetalate *in situ* whereby a strong bond is formed.

FURFURYL ALCOHOL RESINS. W. H. Adams, Jr., and H. H. Lebach (to Haveg). U. S. 2,471,600, May 31. A partially dehydrated furfuryl alcohol condensate is rendered heat convertible by mixing therewith an amino aromatic sulfonate.

LUGGAGE FRAME. H. Freeman. U. S. 2,471,612, May 31. A plastic luggage frame.

RESINOUS ESTERS. W. Krumbhaar, U. S. 2,471,629, May 31. Copal-like resin esters are prepared by depolymerizing a reversible gel resin of a rosin acid-polyhydric alcohol ester modified with maleic acid.

RESINOUS PRODUCTS. H. H. Lebach (to Haveg). U. S. 2,471,631, May 31. A reactive composition of dehydrated phenol-formaldehyde condensate and a dehydrated condensate of furfuryl alcohol.

POLYACRYLONITRILE. S. A. Harrison (to Goodrich). U. S. 2,471,742-3, May 31. Polymerizing acrylonitrile in aqueous emulsion containing ethylene dichloride or an aromatic hydrocarbon.

COPOLYMER. D. T. Mowry and C. L. Mills, Jr. (to Monsanto). U. S. 2,471,760, May 31. A copolymer of styrene and a phenyl-vinyl acetate.

COPOLYMERS. R. B. Seymour and J. M. Butler (to Monsanto). U. S. 2,471,785, May 31. An interpolymer of a biphenyl or derivative and styrene or a derivative.

MOLDING. W. P. Cousino (to Chrysler). U. S. 2,471,-813,-4, May 31. Apparatus for injection molding of plastic material.

RESINS. M. J. Hunter and W. C. Banman (to Dow). U. S. 2,471,818, May 31. A synthetic resin copolymer of an α,β-unsaturated dicarboxylic acid, a vinylidene compound, and divinyl benzene.

POLYMERIZATION. M. Hunt (to Du Pont). U. S. 2,471,-959, May 31. Polymerizing ethylenically unsaturated monomers in the presence of an azo compound as a catalyst.

MENDING DEVICE. D. C. Hungerford (to Hungerford Plastics). U. S. 2,472,016, May 31. A plastic mending device.

PRINTING INKS. C. A. Rietz (to Interchemical). U. S. 2,472,125, June 7. Condensate of a phenol and a terpene dissolved in a polyglycol and exhibiting the property of setting upon addition of water.

CONDENSATES. C. Weizmann (to Polymerizable Products Ltd). U. S. 2,472,135, June 7. Condensing a compound having methylene or methine directly linked to an unsaturated carbon including an aromatic nuclear carbon and an $\alpha\ \beta$ unsaturated aldehyde ketone, or ester in the presence of a solid complex of potassium hydroxide and an acetal, ketal, or ether of ethylene glycol.

CELLULOSE ETHERS. W. D. Paist and F. Berardinelli (to Celanese). U. S. 2,472,227, June 7. Color-stabilizing cellulose ethers by extracting with a lower alcohol and incorporating octyl, decyl, or triethyl citryl sulfite therewith.

RESIN. E. J. Coleman (to Crane Packing). U. S. 2,472,247, June 7. Composition comprising asbestos filler, powdered lead-antimony-tin alloy, graphite, and a reactive phenol-formaldehyde resin.

DENTURE. J. A. Saffir (to Dentists' Supply). U. S.

DEVELOP YOUR THOROUGHBRED

Your product may be a thoroughbred . . . yet in the rough. As a wild stallion needs training to be of value . . . so does your product need that hand of skill to put it in the running on the market. All the services that go into making a successful plastic product are at your disposal—at PYRO! Write today.

Pyro

PLASTICS CORPORATION

691 CHESTNUT STREET, UNION, NEW JERSEY

---

it's revolutionary . . . .

the MOSLO UNIVERSAL MINIJECTOR

ALL-HYDRAULIC 2 OUNCE INJECTION MOLDING MACHINE

The smooth, fast way this newest Moslo Minijector Injection molding machine molds all thermoplastics will get you many more perfect shots per hour at amazingly low operating cost.

The 2 ounce Hydraulic Minijector provides topnotch, big machine performance. It is the latest word in compact, efficient molding machine design. Really engineered for production.

Just check these outstanding features —

- Manual or Completely Automatic Operation
- Stainless Steel, Torpedoless cylinder, Pat's. Pend'g.
- Maximum Injection Pressure — 16250 lbs. per square inch
- Plasticizing Capacity — 20 pounds
- Mold Casting Area — 30 square inches
- Push Button Controls
- Universal mold-clamp assembly (operates vertical or horizontal)

Immediate inquiries invited to insure early delivery.

MOSLO MACHINERY COMPANY

2443 PROSPECT AVENUE, CLEVELAND 15, OHIO

FOR SMALL SCALE PRODUCTION, INQUIRE ABOUT

¾ OUNCE HYDRAULIC MINIJECTOR

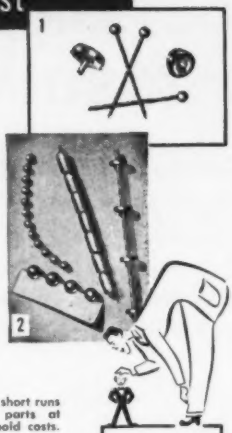
¾ OUNCE HAND OPERATED MINIJECTOR

Small custom moldings, color chips, samples, tensile and compression bars are economically produced on these low-cost MINIJECTORS. They feature demountable, interchangeable cylinder and heater units which permit change of materials and colors in only 3 minutes. Write for details.

GRC for specialized SMALL injection moldings at Low Cost

FULLY AUTOMATIC PLASTIC INSERTS

1. INDIVIDUAL INSERTS—Small plastic parts produced with automatic insert feed. High rate of production at low cost. Relatively reasonable mold charges.
2. CONTINUOUS INSERTS—Small plastic members, accurately spaced on continuous insert mediums, such as tape, cord, wire, chain, etc. This new method can also produce alternating 2-color products, as well as "jump-spaces" when desired. Economical production and mold costs.



All Thermoplastics! NYLON a specialty!

We specialize in short runs of tiny plastic parts at unusually low mold costs.

Maximum size: .03 oz. — 1¼" long
Minimum size: Unlimited

Write Today for Samples and Prices

GRIES REPRODUCER CORP.

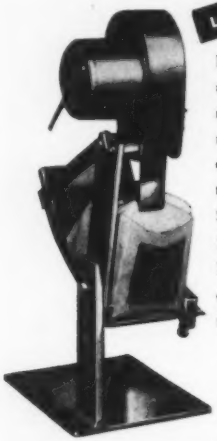
133rd Street & Willow Ave., New York 54, N. Y.

use this Bagger

FOR FASTER PACKAGING

LOW IN COST

EASY TO USE



Designed to handle bagged products with a minimum of effort at a maximum speed. Simple adjustments for height . . . tilting forward or backward enables the operator to set machine at easiest position. Stainless steel trough with capacity of 200 bags . . . adjustable to bag sizes. Blower, equipped with air filter, opens bag and keeps it free from foreign matter. It's a time saver!

ROCKFORD Anderson BROS. MFG. CO. ILLINOIS

Send today for Bulletin No. 10-31

2,472,492, June 7. Method for casting or molding a plastic denture.

CONDENSATES. W. J. Sparks and D. W. Young (to Standard Oil Development). U. S. 2,472,495, June 7. Condensing a copolymer of a polymerizable aromatic compound and an olefin with an alkene dihalide in the presence of a Friedel-Crafts catalyst.

POLYMERIZATION. A. B. Hershberger (to Atlantic Refining Co.). U. S. 2,472,589, June 7. Contacting α-alkyl styrene with a Friedel-Crafts catalyst in the presence of a polyalkylpolysiloxane solvent at a temperature below 10° C.

SILICONE GUMS. M. M. Sprung (to G. E.). U. S. 2,472,629, June 7. Contacting a liquid polymeric dimethyl siloxane copolymerized with monomethyl siloxane with an organophosphorous halogen compound.

INTERPOLYMERS. R. E. Holmen (to Du Pont). U. S. 2,472,661, June 7. Heating dimethallyl maleate, an ester of methallyl alcohol with a dibasic acid, and monomeric styrene.

COATINGS. B. C. Pratt (to Du Pont). U. S. 2,472,680, June 7. Stirring metallic particles in a hot organic solvent solution of polyethylene, cooling to coat the particles with a film of polymer, and dispersing in a film-forming vehicle.

POLYMERS. J. B. Diekty (to Eastman). U. S. 2,472,811, June 14. Heating in the presence of a catalyst an α-fluoromethyl acrylic acid ester.

BONDING MACHINE. J. P. Graham and W. R. Church (to Singer) U. S. 2,472,820, June 14. An electrostatic bonding machine.

PLASTICIZERS. F. Johnston and W. H. Hensley (to Carbide). U. S. 2,472,900-1, June 14. Plasticizers for vinyl resins, especially vinyl halides, comprising diester amides.

POLYMERIZATION. J. W. Britton and R. C. Dosser (to Dow). U. S. 2,473,005, June 14. Polymerizing a vinyl halide in the presence of an inert ionizing solvent containing an acidic complex catalyst such as a chromium or aluminum salt-peroxide complex.

COPOLYMER COMPOSITION. H. M. Kulman (to Kulastic). U. S. 2,473,030, June 14. Vinyl chloride-acetate copolymer mixed with plasticizer, clay, and ground peanut hulls or shells.

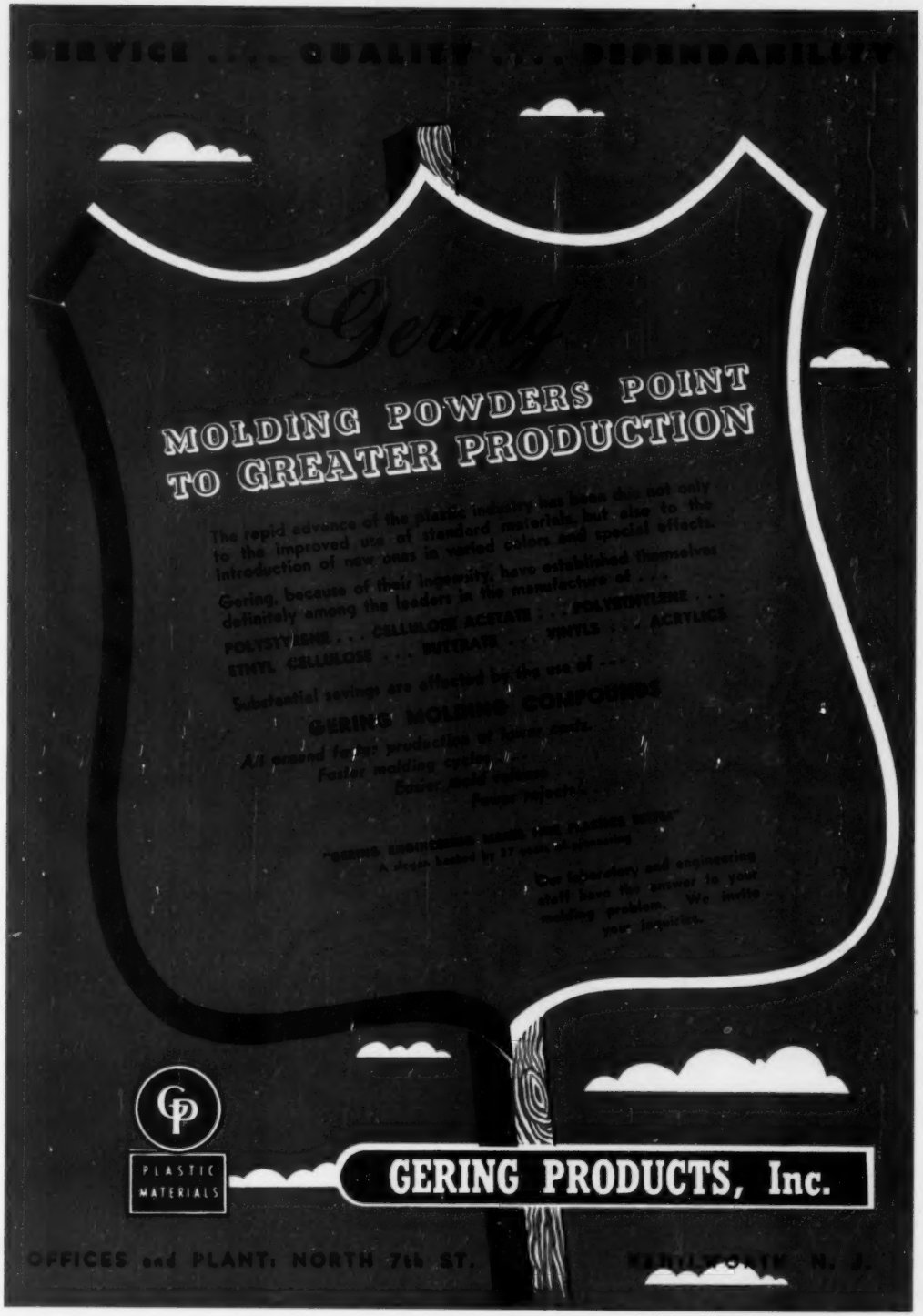
POLYMERS. D. E. Adelson and T. W. Evans (to Shell). U. S. 2,473,124, June 14. Heating and reacting a carboxylic acid ester of a β, γ-monoolefinic monohydric alcohol with a primary or secondary alcohol whereby a polymer of the unsaturated alcohol is formed.

THERMOSETTING RESINS. R. C. Hesselbart (to L-O-F). U. S. 2,473,145, June 14. Condensing phenol and formaldehyde in acid medium until a two-phase separation occurs, adding alkali to convert to a single phase, adding additional formaldehyde and continuing reaction.

STRUCTURAL MATERIAL. J. F. T. Blott (to Shell) U. S. 2,473,326, June 14. Mixing natural soil with water, formaldehyde, resorcinol, and hydrated lime, and aging to produce a water repellent, rigid material.

TOOTH. S. Slavin U. S. 2,473,396, June 14. A reinforced plastic tooth.

MELAMINE RESINS. P. Adams (to American Cyanamid). U. S. 2,473,463, June 14. Heat-reacting methanol, melamine, and aqueous formaldehyde in the presence of propanol or a butanol. (*Turn to page* 128)


SERVICE . . . QUALITY . . . DEPENDABILITY
Gering
MOLDING POWDERS POINT TO GREATER PRODUCTION
The rapid advance of the plastic industry has been due not only to the improved use of standard materials, but also to the introduction of new ones in varied colors and special effects.
Gering, because of their ingenuity, have established themselves definitely among the leaders in the manufacture of . . .
POLYSTYRENE . . . CELLULOSE ACETATE . . . POLYETHYLENE . . .
ETHYL CELLULOSE . . . BUTYRATE . . . VINYLS . . . ACRYLICS
Substantial savings are effected by the use of . . .
GERING MOLDING COMPOUNDS
All around faster production of better parts.
Faster molding cycles.
Easier mold release.
Fewer rejects.
"GERING ENGINEERING MEANS MORE PLASTICS MOLDED"
A slogan backed by 17 years of pioneering
Our laboratory and engineering staff have the answer to your molding problem. We invite your inquiries.
GP
PLASTIC MATERIALS
GERING PRODUCTS, Inc.
OFFICES and PLANT: NORTH 7th ST.
KENILWORTH, N. J.

Gold & Silver *plating captures sales for plastics*

You'll find that Mirro-plex gold and silver finishes are your best bet for inexpensively transforming almost any lack-lustre plastic novelty into a fast selling, demanded article. These glistening simulated gold and silver platings add immeasurably to the appearance, sales-lure and market value of your plastic brooches, chips, sprays, earrings, charms, bracelets, combs and barretts and other plastic jewelry.

We'll show you how a Mirro-plex finish can make "class" items of your plastic merchandise at very low cost. Please send a minimum of one dozen samples. We'll return them to you promptly, beautifully plated. No obligation or charge.

mirro-plex, inc.

"Finishes that Sparkle"

160 FIFTH AVENUE • NEW YORK 10, N. Y.
WAtkins 9-3030

NEW MOLD LUBRICANT
self-dispensing aerosol fog

Bomb-Lube

- No sticking pieces — no down time
- Let your presses run 24 hours a day
- Crystal clear — will not discolor plastic
- Heavy duty — cures the toughest molds
- Economical — one cent per application
- Up to 35 cycles for each application

Don't delay . . . send for complete details about this remarkable cost-cutting product today.

PRICE-DRISCOLL Corporation
Room 1107 270 Broadway
New York 7, New York

REGENERATED CELLULOSE. G. D. Hiatt and C. L. Crane (to Eastman). U. S. 2,473,473, June 14. Mixing cellulose, nitrogen tetroxide, and a solvent until solution occurs and setting the solution.

CONDENSATES. E. Keller and R. Zweidler (to J. R. Geigy). U. S. 2,473,475, June 14. Heating a stilbenetriazine compound in alkaline solution with formaldehyde.

RESINS. J. R. Dudley (to American Cyanamid). U. S. 2,473,498, June 21. Heating a polyamine, acrylonitrile, and an ammonocarbonic acid.

POLYMERIZATION. G. W. Smith (to Goodrich). U. S. 2,473,548-9, June 21. Polymerizing monomeric vinylidene compounds in water in the presence of silver-ammonia complex and a peroxide or a silver-oxalate ion solution and a peroxide.

LENSES. J. Johnson (to Combined Optical Industries). U. S. 2,473,588, June 21. Method of molding optical elements of varying thickness from transparent plastic material.

KNOB. G. V. Jakeway (to Keller Brass). U. S. 2,473,-648, June 21. A control knob of molded thermoplastic material.

PROSTHETIC DEVICES. A. A. Nelson. U. S. 2,473,723, June 21. Method of making hollow prosthetic devices from plasticized vinyl resin.

EMULSIONS. E. L. Kropa (to American Cyanamid) U. S. 2,473,801, June 21. Aqueous emulsion containing polyallyl ester of a polybasic acid and a maleic polyester of hexaethylene glycol.

POLYMERIZATION. W. K. Wilson (to Shawinigan) U. S. 2,473,929, June 21. Polymerizing polymerizable vinyl compounds in aqueous emulsion by initially reacting in the presence of an iron salt and a peroxide and adding additional peroxide after partial reaction.

POLYMERS. W. F. Gresham (to Du Pont). U. S. 2,473,-994, June 21. Polymerizing 1,3-dioxolane and a linear formal in the presence of an acid catalyst.

POLYMERS. W. E. Hanford, J. R. Roland, and W. E. Mochel (to Du Pont). U. S. 2,473,996, June 21. Copolymers of ethylene and a vinyl ester of a branched chain acid.

PLASTICIZER. L. D. Myers and J. D. Fitzpatrick (to Emery Industries). U. S. 2,474,010, June 21. A mixed ester of an aliphatic dihydric alcohol with a fatty acid and a carboxylic aliphatic nitrile.

POLYVINYL KETALS. W. R. Cornthwaite and N. W. Flodin (to Du Pont). U. S. 2,474,095, June 21. Mixing a vinyl alcohol containing polymer, a diketone, and an acid catalyst and heating.

CONDENSATES. C. Weizmann (to Polymerizable Products). U. S. 2,474,175, June 21. Condensing an unsaturated methylene or methine containing compound with an alkyl or alkylene halide in the presence of a complex of potassium hydroxide and an organic compound containing two ether-forming oxygen atoms.

LAMINATING TAPE. C. L. Weidner and L. W. Eger (to Industrial Tape). U. S. 2,474,292, June 28. Laminating tape for use in laminating plywood comprising a flexible fibrous backing impregnated with a phenolic, urea, or melamine aldehyde resin, a cellulose derivative, vinyl ester, or vinyl alcohol resin, and a humectant, said tape being thermally curable.

THE NAVY'S CONSTELLATION PO-1W is equipped with L. P.* parts by ZENITH!

OTHER AIRCRAFT EQUIPPED BY **ZENITH**

Bell • Boeing
Chance-Vought
Consolidated-Vultee
Curtiss-Wright
Douglas • Fairchild
Martin • McDonnell
Republic

•

"LIKE NO OTHER CONSTELLATION EVER SEEN BEFORE," the Navy Constellation's flight characteristics are not drastically affected by the radomes visible on the top and bottom of the fuselage.

These superbly "functional" radomes, as well as other skillfully designed nose and tail parts, are the result of the harmonious collaboration of Lockheed and Navy engineering skill and ZENITH'S unique equipment and experience in producing L. P.* aircraft parts.

If you have any problem of novel design—even if, like this fantastic Lockheed innovation, its like had never been seen before—

Come to Zenith in the well-earned confidence that ZENITH engineering either already has, or will quickly find, the solution.

L.P.* LOW PRESSURE LAMINATION

ZENITH PLASTICS CO.

1548 W. 135th St. · Gardena, California · Plymouth 4-2934

NEW MACHINERY AND EQUIPMENT

Threaded insert—Clover Industries, Inc., 539 Ellicott St., Buffalo, N. Y., offers a deep-drawn rolled-thread insert for use in plastic molding. Made of light gage steel, the inserts are said to cost about half as much as brass screw machine parts of the same size. Four sizes are available—¼-20, 10-32, 8-32, and 6-32. Testing at Durez Plastics & Chemicals, Inc., showed that although the insert is more resilient under pressure than a screw machine insert, there is no change in the diameter after molding in. There was no leakage around the Clover insert when a properly constructed retaining pin was used. When leakage does occur, the insert may often be removed and replaced. Because of their thin wall sections, the inserts may be located closer to the edges or corners without danger of cracking the molded part.

Glenn Electric Heater Co., 239-241 Canal St., New York 13, N. Y., has recently developed and applied for patents on a new type tubular resistance heating element. This unit, known as the Glenn-Star Safety Heater, is constructed by centering a helical coil of high quality resistance wire in a seamless inconel or copper tubing. A star-shaped ceramic insulator keeps it firm in the center of the tubing and the remaining space is filled with Magnorite, a mineral material. The tubing is then compressed, so that its content is solidified to the compactness of rock. It is still possible, however, to shape this heating element wherever necessary as, for instance, in mounting them in a heating cylinder of an injection molding machine. The element can handle safely up to 50 watts per in. and, if used as an immersion unit, it will handle safely up to 60 watts per inch. Maximum sheath temperature is 1500°F.

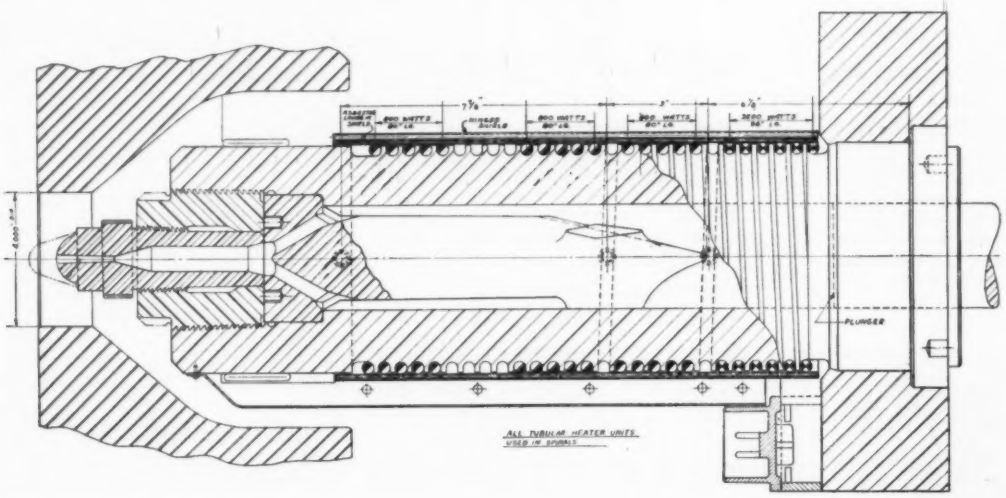
About two years ago Watson-Stillman switched over from band-type heaters to tubular-type heaters and reports a much longer life and, therefore, greatly reduced maintenance costs have made themselves apparent.

Magnetic separator—Dings Magnetic Separator Co., 4740 West Electric Ave., Milwaukee, Wis., is offering a permanent drum type non-electric Alnico magnetic separator for automatic removal of tramp iron. Complete with shaft and V-belt drive sheave, this magnet can be installed at the discharge end of chutes, spouts, and conveyors for processing plastics, chemicals, rubber, textiles, etc. The unit features circumferential pole design for uniformity of magnetic field across the drum width and an adjustable dual-purpose leveler and burden feed control.

Tile shear—Molded plastic and aluminum wall tile are cut to size with the Kreger-precision tile shear offered by The L. F. Kreger Mfg. Co., 540 W. 35th St., Chicago 16, Ill. By applying light, uniform pressure, a smooth, even edge can be obtained without fractures or cracks. The shear frame is of angle steel and the blades of tempered tool steel, ground and polished. The adjustable bottom blade is grooved for full, half, and border size tiles.

Hydraulic press—Link Engineering Co., 13849 Elmira, Detroit 27, Mich., introduces a hydraulic press available in capacities from 10 to 50 tons and intended for use in laminating and polishing operations where heat and pressure must be applied to material for processing. Desired pressure, with a minimum of variation, is maintained by an accumulator in the hydraulic circuit. Platens can be obtained in sizes of 12 by 12 in., 20 by 20 in., and 24 by 30 inches. They can be supplied

Heating cylinders of Watson-Stillman machines now use tubular type electrical heating elements. Drawing illustrates the method of assembly of these elements in grooves around the cylinder



Produce Plastics Profitably with
VAN DORN Equipment

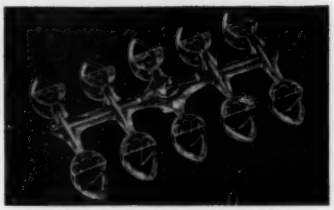
VAN DORN PRESS

Unequalled in the 1 oz. class for molding thermoplastics including nylon. Moderately priced, this versatile press operates 8 hours for under one dollar. It uses less expensive molds, and can be set up by one man in 20 minutes.

NEW SCRAP GRANULATOR

Now you can cut costs even more, by grinding and re-using sprues, rejects, etc. Ruggedly constructed, this grinder has an efficient cutting chamber and is easily cleaned.

MADE AT LOW COST ON VAN DORNS . . .



Polystyrene, 1 oz., 5″ x 3″

Cellulose Acetate, ¾ oz., 5″ x 5″

Nylon, 1 oz., 8″ x 3″

Free
BULLETIN
tells all the facts . . .
Write for it NOW!

We make Mold Bases for Van Dorn Presses.

THE *Van Dorn* IRON WORKS CO.
2687 EAST 79th STREET • CLEVELAND 4, OHIO

Awaiting you at this great Chemical Industries Exposition, will be more informative exhibits and demonstrations, more cost-saving ideas, more new developments, more practical answers to production problems . . . than you've ever seen assembled in one place expressly for the chemical processing industries. Plan now to see and learn about the latest developments in methods, materials, and equipment for better, faster, and less costly processing of chemical products.

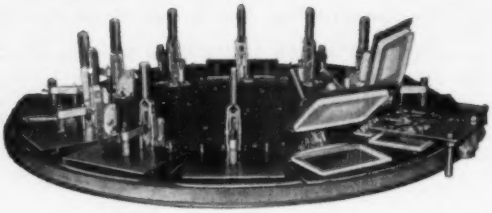
You can get a wealth of valuable information that will help to place your plant in a better position to meet growing competition through lower costs and better products. Be sure to be there.

Management International Exposition Co.

S770

GRAND CENTRAL PALACE
NEW YORK
NOV. 28—DEC. 3

The Merry-Go-Round that Never Broke Down...



No, *this* "Merry-go-round" never broke down, but it *does break* production bottlenecks every day, thanks to versatile De-Sta-Co Toggle Clamps!

It's a high-production assembly fixture for a new plastic product, the "Wheel" Ink Plate, designed by Nichols-Detroit, to replace the old-fashioned inking pads used with rubber stamps. The plastic bottom of the Ink Plate also serves as a reservoir. Ink feeds by capillary action to the upper side of a porous metal plate, where it is ready for use. Through an ingenious design, the flow of ink is rigidly controlled to insure correct distribution over the surface of the plate, providing perfect reproduction at all times, with complete safety in any position.

Here, the bottom of the case is being bonded to the body. They are clamped rigidly in position; action of the clamp also actuates flow of solvent to the mating surfaces of the two plastic pieces at another station, after which they are bonded. Requirements: fast bonding cycle . . . positive clamping pressure for a perfect bond . . . precise alignment of work pieces for accurate assembly. Rapid toggle action, sure holding pressure, rugged durability and well-engineered design make De-Sta-Co No. 207U Toggle Clamps the tool designer's logical choice for this application.

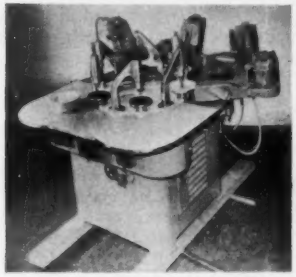
And they're the logical choice, too, for holding parts during
● Assembly ● Welding ● Riveting ● Machining of plastics, metal and other materials. Whatever *your* work-holding problem, there's a De-Sta-Co Toggle Clamp that's a "natural" to solve it. The complete line of more than 40 stationary and portable De-Sta-Co Toggle Clamps is shown in Clamp Catalog No. 49. Send for *your* copy today, and the name of our stocking representative nearest you.

DETROIT STAMPING CO.

327 Midland Ave., Detroit 3, Mich.

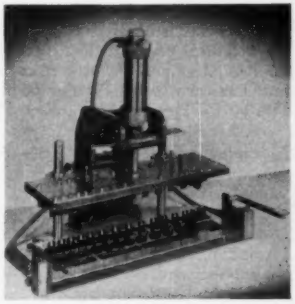
with thermostatically controlled electric heaters or arranged for steam heating with manual controls or automatic thermostat valves.

Rotary edger—For removal of flash on flat circular plastic articles from 3 to 11 in. in diameter, J. M. Nash Co., 2360 N. 30th St., Milwaukee 10, Wis., announces the Nash-116 rotary edger. While developed especially for removing flash from plastic dinnerware and for subsequent buffing and polishing operations, the unit can also be used for a wide range of molded plastic articles. A six spindle machine, it has a variable rate of production from 12 to 24 pieces per min, and a variable rate of spindle speed from 850 to 1700 r.p.m. It is equipped with four abrasive and buffing belt stations for flash removal and buffing. The first two stations utilize dry abrasive belts 2 in. wide and 56 in. long. The third station has a fine grit abrasive belt; the fourth utilizes either an extremely fine abrasive belt impregnated with wax or a canvas buffing belt which carries a polishing compound. A fifth station consists of a motor driven buffing wheel to produce a final polish on the edge of the plate.



The four belt units are mounted on the rear portion of the frame outside the revolving wheel; the buffing wheel motor assembly is mounted on the stationary support shaft of the turret wheel. This set-up permits mounting of special units along the inner circle of the wheel. Rubber faced bottom centers, properly grooved, center the plate and drive without slippage. The top centers, also rubber faced, hold the plates securely onto the bottom centers during the time they revolve through the various finishing stations.

Degating machine—Standard Tool Co., 583 Water St., Leominster, Mass., announces the addition of an air operated degating machine to its line of machines and equipment for the plastics industry. As a safety measure, operation of the air cylinder piston requires the use of both of the operator's hands. Cutters are individually mounted on the base and can be set for different sizes of shots to be degated. Automatic ejection of the runner is provided by the upstroke. The cutter arrangement shown is for degating 36 molded pieces. Specifications for this machine are: 2-in. bore, 2-in. stroke, 80 lb. air pressure required, 8 by 18 in. working area and 11 by 21 in. base dimensions.



It pays to do business in New York State!

Measured by man-days available, business in New York State has lost less time through strikes over the past five years than in any of the other ten leading industrial states. For the whole story, write: *New York State Department of Commerce, Room 401, 112 State Street, Albany 7, New York.*

MODELS and MOLDS

design

model

mold

molded product

Eliminate costly changes in mold revisions by making 3-dimensional plastic models.

S. B. pre-mold testing models are precision made. They'll show you exactly how your final product looks.

From start to finish, S-B engineers translate your idea into a finished product, as they have—for over 25 years—for scores of firms with problems *just like yours.*

INJECTION, COMPRESSION & TRANSFER MOLDS

STRICKER-BRUNHUBER CORP.
Mechanical Developers
19 WEST 24TH ST. NEW YORK 10, N. Y.

BOOKS AND BOOKLETS

Write for these publications to the companies listed. Unless otherwise specified, they will be sent gratis to executives who request them on business stationery

"Tool Engineers' Handbook," edited by Frank W. Wilson

Published by McGraw-Hill Book Co., 330 W. 42nd St., New York 18, N. Y. Price $15.00. 2300 pages.

The whole field of mechanical manufacturing industries and all the processes they employ for fabricating raw materials into finished products are covered, classified under the following 12 major headings:

1) Planning and control of production, inspection, and quality; 2) Materials and machinability; 3) Casting and extruding operations; 4) Metal cutting, grinding, finishing; 5) Metal forming; 6) Welding, gluing, and mechanical joining of materials; 7) Surface finish and protective coatings, peening, balancing; 8) Gaging, inspection, testing; 9) Fixture, die, and tool design; limited production and master tooling; 10) Machine tool controls and feeding devices; 11) Design of threads, gears, bearings, springs, other elements; 12) Mathematics, physics, reference tables.

The material in this book was integrated from the widely scattered technical data developed by 18,000 members of the Society of Tool Engineers, the operating methods and standards of producing companies, engineering societies and institutes, and published findings of the technical press.

Although this book is primarily for use by tool or production engineers, it will quickly inform non-engineering management on the essentials of manufacturing and help them check upon statements and recommendations made by staff members.

"Elementary Plastics," by J. Maitland-Edwards

Published by Charles Griffen & Co., Ltd., 42 Drury Lane, London WC2, England. Price 12s, 6d. net. 192 pages.

The general aspects of plastics are discussed in non-technical language in this treatise which begins with the general introduction to plastics, including historical background, definition, and classification. The text then discusses the plastic materials, the properties and fabrication of thermosetting and thermoplastic plastics, and ends with a consideration of the present status of the industry and future trends. Generously supplemented with diagrams and illustrations.

"Handbook of Patents," by Harry Toulmin

Published by The W. H. Anderson Co., 524 Main St., Cincinnati 1, Ohio. Price $11.25. 920 pages.

Information on the increasing property value of patents and the many ways in which their value may be reduced or lost is contained in this comprehensive handbook. The text presents the underlying philosophy of patent law, giving a broad understanding of its relationship to manufacturing, research, and engineering. Each major chapter is preceded by an introductory orientation statement that tells exactly what the chapter contains and how to use the information.

Beginning with the basic philosophy of patent law, each chapter is a guide to the steps that must be taken in patent law from investigating the novelty of an idea through preparing a patent application, prosecuting it, and thereafter protecting it by litigation in the courts. The international situation is discussed, with chapters on foreign patents and on the treaties and conventions dealing with patents to which the United States is a party. Included are the full Rules of Practice in the U. S. Patent Office as well as the forms used in patent work, the comparative provisions on which patent practice is based, and indices of patent laws.

"Organic Coating in Theory and Practice," by A. V. Blom

Elsevier Publishing Co., Inc., 215 Fourth Ave., New York 3, N. Y. Price $6.00. 298 pages, 121 illustrations.

The science of organic coatings is ably summarized by this Swiss expert in the field. The materials described and theoretical considerations presented are up-to-date and well organized. Emphasis is mainly on the interpretation of the properties of film-forming materials on the basis of experimental facts treated statistically. Natural and synthetic polymers and the physical and chemical processes by which they form films are surveyed. The significances of tests commonly employed in evaluating coating film properties and pigment-vehicle relationships are dealt with in other chapters. There are occasional errors in spelling or choice of words in the course of translation but these in no way detract from the value of this book to anyone interested in the fundamental problems of surface coatings.—*G.M.K.*

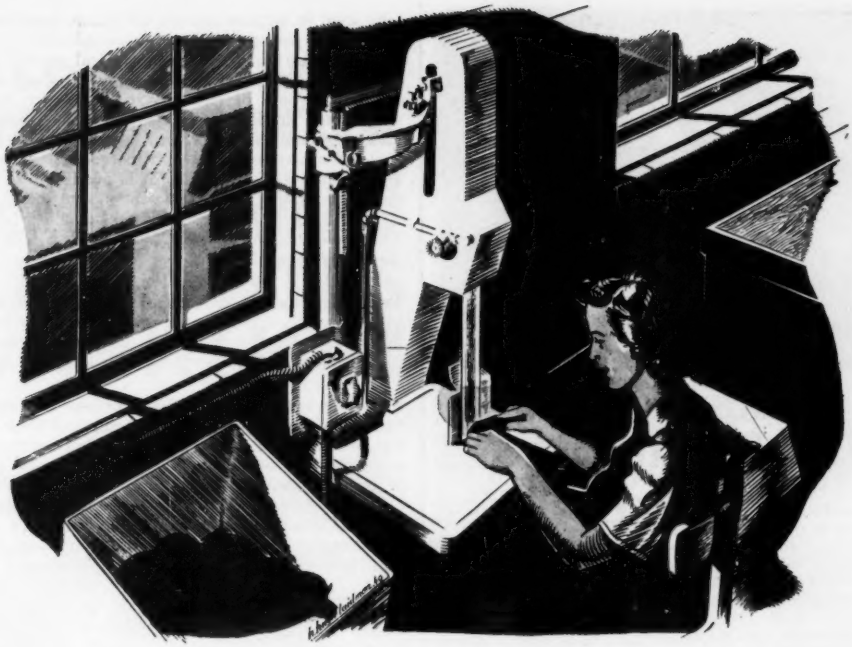
Ampco safety tools (Catalog No. 119)—Complete information about the company's line of safety hand tools is contained in this 32-page booklet. All tools are illustrated and specifications are given. *Ampco Metal, Inc., 1745 S. 38th St., Milwaukee 4, Wis.*

Aroclor 1254 (Technical Bulletin No. P-138)—The use of Aroclor 1254, chlorinated biphenyl, as a lubricant in the manufacture of fire-resistant paper drapes and as a co-plasticizer for vinyl coating on paper drapery material is described in this five-page bulletin. *Monsanto Chemical Co., St. Louis 4, Mo.*

Molding materials and resins—This 12-page booklet presents the outstanding properties of the company's products and is illustrated with color photographs which show typical uses for Beetle and Melmac molding compounds, Urac and Melurac resin adhesives, and Melmac and Laminac resins. *Plastics Dept., American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y.*

Fiberglas products for plastics reinforcements—Fiberglas products—including yarns, cloths woven of the yarns, mats, and chopped strands—that are available for the reinforcement of plastics are described in this 12-page, illustrated booklet. The booklet includes information concerning the resins with which each is commonly used, the types of molded products to which each is best adapted, and the molding processes commonly employed. *Owens-Corning Fiberglas Corp., Toledo 1, Ohio.*

Who's who in plastics—A comprehensive guide for executives, engineers, designers, buyers, and salesmen



To improve finish and reduce costs

Apply the 2-Factor Formula

Quality abrasives . . . correctly used. This is the *2-Factor Formula* that is being applied with outstanding success in the plastics industry to improve finish and reduce costs.

One factor in this formula—QUALITY—never varies if you specify Abrasives by CARBORUNDUM. These products cut fast and clean without shedding, gumming-up, or glazing. Belts, in both waterproof and dry backings, are available in a wide range of grains. You can select exactly the right abrasive products to meet any conditions imposed by type of equipment, material, finish, production rate, and unit costs. Properly used, Abrasives by CARBORUNDUM give maximum service at minimum cost.

To help you *use these products correctly,* abrasive engineers of The Carborundum Company can apply a wealth of technical knowledge and practical experience to your problems. They can also call on the tremendous technical resources of the Company when problems are unusual or involved. These men can help you balance abrasive characteristics against application requirements as a means of getting better work at lower cost. Call in one of these representatives. He'll help you apply the *2-Factor Formula.* The Carborundum Company, Niagara Falls, N. Y.

COATED ABRASIVES BY

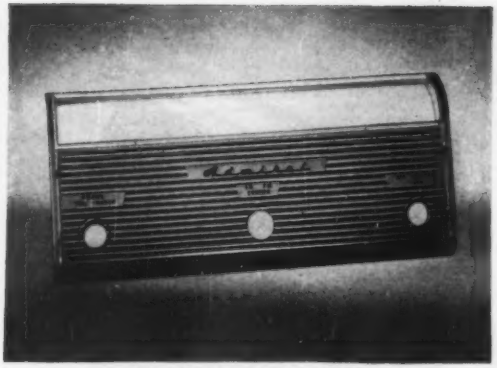
CARBORUNDUM

TRADE MARK

BELTS SHEETS ROLLS DISCS

New Plant of the Coated Products Division

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company



Plastic Escutcheon for Admiral Radio

ANOTHER EXAMPLE OF PRECISION

CUSTOM PLASTIC MOLDING

Many of America's leading manufacturers depend on us for their difficult-to-make plastic parts or products, as we are prepared to do the complete job of designing, model-making, mold-making and high-speed injection molding. Ask us to prove how we can help you.

VICTORY MANUFACTURING COMPANY
1724 W. Arcade Place, Chicago 12, Ill.
Established in 1930

By

VICTORY of CHICAGO

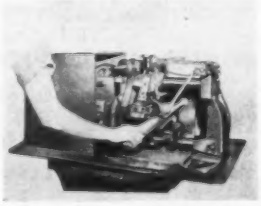
PLASTIC CABLE MARKING

BY HAND OR MACHINE TO

BASEBALL BAT MARKING MACHINES

Acromark marking machines and tools are not just limited to one or two models.

We have built *several hundreds* of different designs and we have standardized on those designs most widely adaptable.



When you want to mark your products see—

The ACROMARK Company

365 Morrell St. Elizabeth 4, New Jersey

who wish to inquire into the affiliation, experience, and training of persons in the plastics industry is found in this 244-page book. The biographical section lists the names of 2989 individuals, their present and past affiliations, date of each, position in each case, and educational background. The company section lists company name and address, key officers, position of each, company products, and methods of manufacture. By consulting both sections, it is possible to obtain the complete picture of an organization and those who run it. For S.P.I. members $4.50; for non-members $5.50. *The Society of the Plastics Industry, Inc., 295 Madison Ave., New York 17, N. Y.*

Triethyl phosphate—Specifications, properties, and uses of triethyl phosphate are presented in this four-page bulletin. Included is a bibliography of technical literature. *Tennessee Eastman Corp., Kingsport, Tenn.*

Synthetic resins and their properties—Revised charts listing the company's synthetic resins and their properties are now available. One chart lists synthetic resin solutions only and the other includes resins available in solid and solution form. Information on the 8½ by 11½ in. charts includes trade names of the resins, brief chemical descriptions, and typical test data such as acid number, color, softening point, and viscosity ratings. *Hercules Powder Co., Inc., Wilmington, Del.*

Data on polystyrene—New data describing Lustrex X-810 polystyrene, a resinous thickening agent for latex systems, has recently become available. The information includes instructions for dissolving the resin in water, with a table showing the quantity of thickening solution required to provide the desired viscosity in nine typical resinous emulsions. *Monsanto Chemical Co., St. Louis 4, Mo.*

Plastic molding presses (Bulletin 249)—Described in this four-page bulletin are the company's facilities for designing and building special presses and large high-tonnage presses for the giant-sized moldings being produced today. Illustrations and specifications of the company's standard presses given. *Lake Erie Engineering Corp., 330 Woodward Ave., Buffalo 17, N. Y.*

The finest in coated products . . . Carborundum—To mark completion of its modern factory for the development and manufacture of coated abrasive products, the company has published this 32-page, two-color booklet presenting the outstanding features of its new service, research, and production facilities at Wheatfield, N. Y. The booklet is illustrated with dry brush drawings. *The Carborundum Co., P. O. Box 337, Niagara Falls, N. Y.*

Clearsite plastic capsule vials—Two-color catalog sheet describes the outstanding features of the company's vials, and lists specifications and prices. *Celluplastic Corp., 50 Avenue L, Newark 5, N. J.*

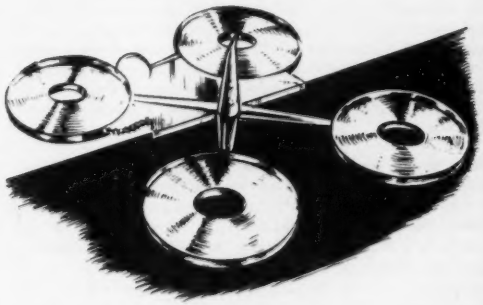
Crotonic acid—Specifications, properties, and uses of crotonic acid are presented. A bibliography of technical literature containing numerous references to the use of the chemical and its derivatives is included. *Tennessee Eastman Corp., Kingsport, Tenn.*

Handbook for care of centrifugal pumps (Bulletin 08X6256A)—The why and how of pump construction and their effect on pump maintenance is presented in

MOLD OVERLOAD COMPENSATOR

NEW LESTER PATENT

ELIMINATES FLASHING!



HERE'S WHAT IT DOES:

- Molds projected areas beyond rated locking tonnage.
- Holds large area parts to precise tolerances.
- Reduces weight of large area pieces.
- Eliminates trimming and regrinding flash.
- Cuts out rejects due to lamination, strains, welds, tails.

This revolutionary new invention operates *with the speed of thought* to control and compensate for oversize molds, prolonged delay between cycles and excessive injection pressures. It has been field tested on all materials for over a year. One of the first users, a large midwest manufacturer, has reported phenomenal results. On one mold, they use 2 *ounces less material for each 22 ounce shot!*

The MOLD OVERLOAD COMPENSATOR is available for all Lester Injection Molding Machines—new or old. Call for full particulars of this sensational development in injection molding control.

LESTER

ENGINEERING COMPANY

2621 CHURCH AVE. • CLEVELAND, OHIO

UNIFORM QUALITY

SATISFACTORY PERFORMANCE

AMPACET *Reg.

CELLULOSE ACETATE MOLDING POWDER

POLYSTYRENE MOLDING POWDER

Colors unlimited
Transparents of excellent clarity
Economical

for a Multitude of NEW uses

AMPACET SPECIAL EFFECTS

- PEARL EFFECT
- METALLICS • TINSEL
- PHOSPHORESCENTS

We also custom color your crystal Polystyrene into standard and special colors.

AMERICAN MOLDING POWDER and CHEMICAL CORP.

Main Office: 44 Hewes Street • Brooklyn 11, N. Y.
Plant: 67 North 9th Street • Brooklyn 11, N. Y.
Phone: UNion 5-3887 • *Cable:* Chemprod Brooklyn

STAFLEX IXA

Years of use have proved plasticizing vinyl resins with STAFLEX IXA improves

Cold resistance
Heat resistance
Permanent set
Surface texture
Processing rates
Cost

DEECY PRODUCTS CO.
120 Potter St. Cambridge, Mass.

MICO

PANTOGRAPHIC ENGRAVER

VERSATILE
ACCURATE
DEPENDABLE

FEATURES

1. Ball-bearing micrometer spindle
2. Precision - machined pantograph
3. Four reduction ratios: 1.5:1, 2:1, 3:1 and 4:1
4. Absolute accuracy in three-dimensional duplicating
5. Copy and work right side up: always in direct view of operator
6. Wide selection of type
7. Many attachments available to increase versatility
8. Minimum work spoilage — tracing stylus and cutter are lifted simultaneously
9. Experience unnecessary
10. Universal Motor will operate on AC or DC current
11. Portable: weighs only 30 pounds
12. Economical price: $225.00

CHECK THESE FEATURES
Send for detailed brochure

MICO INSTRUMENT CO.
80M Trowbridge Street, Cambridge, Mass.

this 16-page booklet which tells how to figure head and presents tables to help determine total friction loss. Causes and cures for various trouble are offered, along with a maintenance timetable. Other subjects covered include little known facts about cavitation and how to protect pumps from it, water's role as a lubricant in pumps, and common mistakes in packing stuffing boxes. *Allis-Chalmers Mfg. Co., 1163 S. 70th St., Milwaukee, Wis.*

Flake formaldyhyde (Bulletin N-16-1)—Solid formaldehyde in flake form which is said to be easier to handle than powder formaldehyde and to complete in all fields with formalin is described in this four-page brochure. The physical properties and specifications of the new product as well as suggested uses are presented. *Celanese Corp., of America, 180 Madison Ave., New York 16, N. Y.*

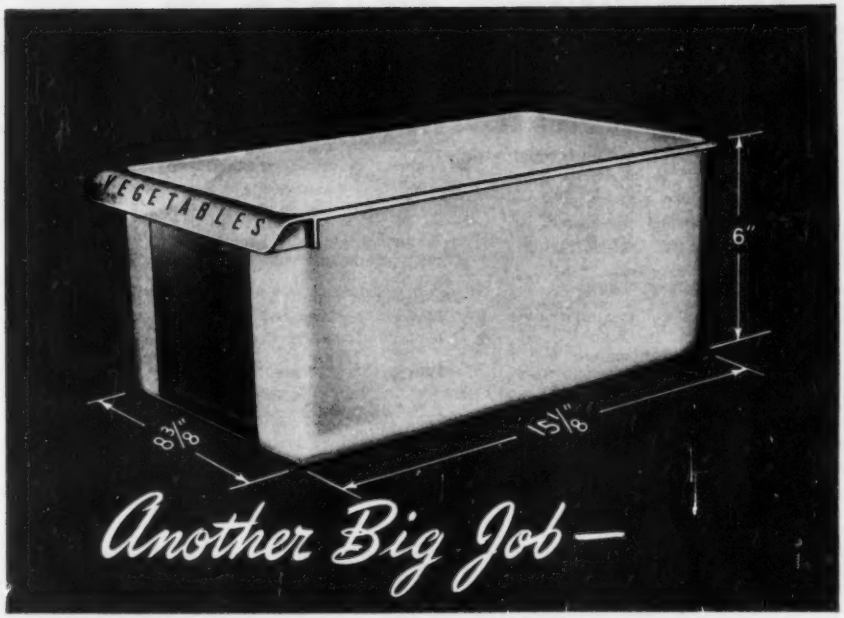
Les propriétés et les formes dans l'industrie—Written by Jacques Dinzin, this 105-page book is a scientific approach to the study of industrial production. In essence, the text investigates the influence of the changing pattern of life on the changing pattern of industry. For further information, address *Bureau D'Études et De Documentation Industrielle, 15, Rue Fourdroy, Paris, France.*

Developing and selling new products—Based on first hand information supplied by 100 business firms, this booklet describes methods of locating new product ideas; selection of a product and its preparation for the market, including designing, naming and packaging; and the planning of marketing programs. *The booklet may be obtained for 25¢ from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., or from any field office of the Department of Commerce.*

Printing on plastics—This 12-page booklet briefly describes the various methods employed for printing on plastic materials—letterpress, dry offset, and aniline printing; gravure or intaglio printing; and offset lithography. Included are data on plates, presses, and inks used. The booklet also presents a chart which covers cost per plate, plate size, press costs, impressions per hour and per plate, drying time, drying methods, etc. Helpful diagrams of the printing methods supplement the booklet. A three-page list of ink suppliers is included. *Monsanto Chemical Co., Merrimac Div., Everett Station, Boston 49, Mass.*

Bellows controlled-air-power (Bulletin DF-105R)—Described in this booklet are the company's controlled-air-power drill press feeds and their actual installations. The feeds, which were primarily designed for use on small drilling machines, are now in use in more than 2000 manufacturing plants. Specifications and dimensional data of the feeds are presented. *The Bellows Co., Akron, Ohio.*

Vaporized metal coating by high vacuum—An explanation of high vacuum evaporation of metals and other solids is given in this 12-page booklet. An important feature is a table listing the characteristics of various vacuum coating units. Among other specifications, the data include space requirements, approximate shipping weights, evacuation speeds, and approximate ultimate vacuum. *Distillation Products, Inc., 755 Ridge Road West, Rochester 13, N. Y.*



The New NORGE HYDROVOIR Custom Molded by ERIE RESISTOR

This Hydrovoir vegetable compartment for the '49 Norge Refrigerator has excellent resistance to moisture absorption. It is stronger and lighter in weight than glass. The Hydrovoir is molded accurate to dimensions, free from warpage, free from flaws, on our new 28 ounce molding machine.

Erie Resistor, pioneer in the field of custom injection molding, has the experience and facilities for meeting unusual molding problems. We have built an enviable reputation for the successful production of designs declared impossible by others. Erie also has molded pieces economically whose cost had been found prohibitive until we devised practical means of short-cutting expensive methods. It pays to consult Erie Resistor on your injection molding problems. Write for new bulletin describing Erie Resistor's facilities.

Plastics Division

ERIE RESISTOR CORP., ERIE, PA.

LONDON, ENGLAND • • TORONTO, CANADA

PLASTICS STOCK MOLDS*

OCTOBER, 1949

Molders are invited to submit samples of stock products to be described on this page as space permits. Address samples and detailed information to Stock Molds Editor, Modern Plastics, 122 E. 42nd St., New York 17, N. Y.

A—Table model radio cabinet. 10¼ in. long, 6⁷⁄₁₆ in. high, 5⅞ in. deep, inside dimensions; grille opening 2⅞ by 3⅞ in.; dial face opening 3⅜ by 3⅛ inches. Molded in single-cavity compression mold, black and walnut phenolic.

*Reg. U. S. Pat. Office.

B—Table model radio cabinet. 8¼ in. long, 5¹¹⁄₁₆ in. high, 5½ in. deep, inside dimensions; grille opening 3¼ by 3⁵⁄₁₆ in.; dial opening 2¹⁵⁄₃₂ by 2²⁷⁄₃₂ inches. Molded of black and walnut phenolic in single-cavity compression mold; molded of ethyl cellulose in mottled colors.

C—Grille. 3¾ by 4⅜ inches Cellulose acetate, all colors.

D—Escutcheon frame. 3¾ by 4⅛ inches. Cellulose acetate, all colors.

E—Grille. 3⁷⁄₁₆ by 3¹¹⁄₁₆ inches. Molded of cellulose acetate and polystyrene, all colors.

F—Escutcheon frame. 2¹³⁄₁₆ by 3⅝ inches. Molded of cellulose acetate, all colors.

G—Handle. 1⅛ in. high, ⅝ in. wide, 4³⁄₁₆ in. long. Polystyrene and cellulose acetate, standard and mottled colors.

H—Single end pointed knob for ⅜ or ¼ in. shaft; ¾ in. diameter, ¼ in. high. Celluose acetate in all colors, eight-cavity injection mold.

I—Double pointer knob for ⅜ or ¼ in. shaft; ⅞ in. diameter, ¼ in. high. Cellulose acetate, all colors, eight-cavity injection mold.

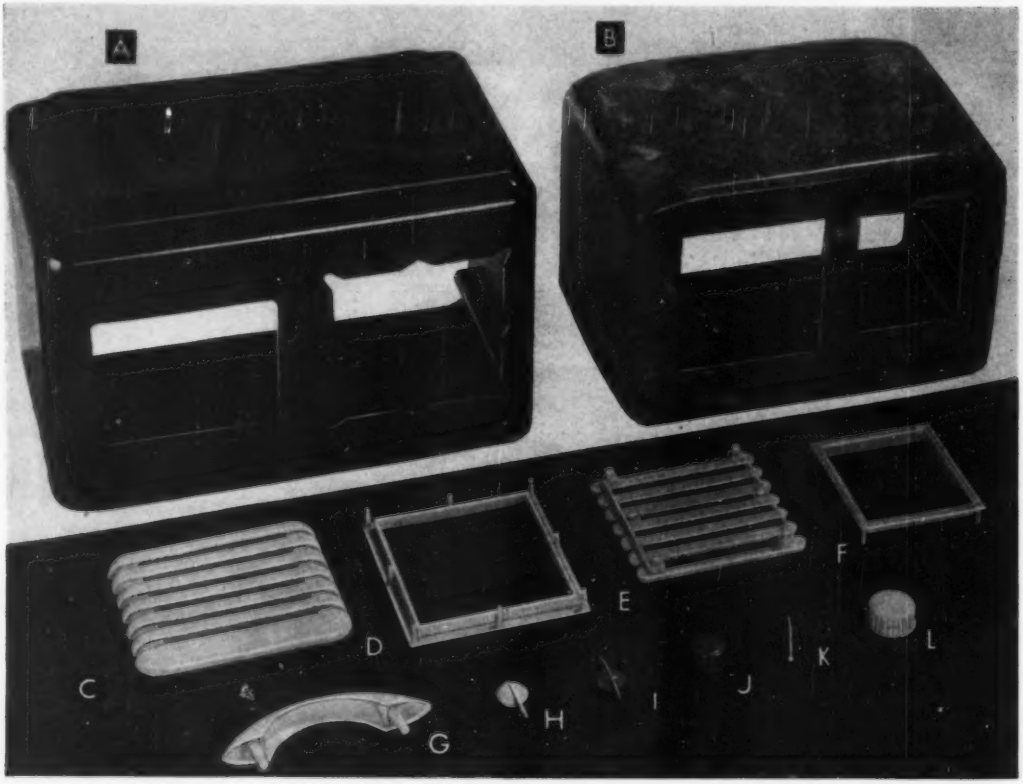
J—Knob for ¼-in. round shaft with flat; ½ in. high, ¾ in. diameter. Injection molded of cellulose acetate, all colors.

K—Bar knob. Brass insert to fit ¼-in. round shaft, tapped for set screw. Compression molded of phenolic, black dull finish.

A to K produced by Charles C. Henry, 4001 W. Wrightwood Ave., Chicago 39, Ill.

L—Knob for ¼-in. round shaft with flat; ½ in. high, 1 in. diameter. Injection molded of cellulose acetate, all colors.

L produced by Chicago Die Mold Mfg. Co., 4001 W. Wrightwood Ave., Chicago 39, Ill.



PURE

DU PONT FORMALDEHYDE

UNIFORM STRENGTH

WATER WHITE

LOW IN ACID

LOW METAL CONTENT

U. S. P. SOLUTION

DU PONT FORMALDEHYDE is designed to meet the high requirements of the plastic industry. It's completely dependable—produced under controlled conditions to assure consistently fine raw material.

SHIPMENTS are made in standard containers from the factory or stocks maintained in principal cities.

DEPEND ON DU PONT also for your requirements of Paraformaldehyde, 95% minimum strength. And Hexemethylenetetramine—Technical and U. S. P. For additional information and technical assistance, call our nearest office.

E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Cincinnati, Dallas,* Detroit, El Monte (Calif.), Houston,* Kansas City,* New York, New Orleans,* Oklahoma City,* Philadelphia, Pittsburgh, San Francisco, Tulsa,* Wichita.*

*Barada & Page, Inc.

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

PROMPT DELIVERY - tank cars and standard packages

You and your Plastic Molder—

Martindell

—An Enduring Relationship

Your choice of a molder is important for two reasons — it is important because the future of your plastic piece is in his hands, and it is important because, given reasonably good service, you will probably continue to use that molder for years. We therefore suggest that you make your choice with great care, and we'd like this organization to be included in those you consider.

MARTINDELL MOLDING COMPANY • Molding By Injection, Compression Transfer and Plunger

North Olden at Sixth
TRENTON 2, NEW JERSEY

JAMES M. KENDALL, 1182 Broadway
New York, N. Y. — Tel. Lexington 2-2892

Plastics
THERMOPLASTIC and THERMOSETTING MATERIALS

T. A. TYLER, Box 4337
Philadelphia, Pa. — Tel. Ogontz 4373

COTTON FABRICS

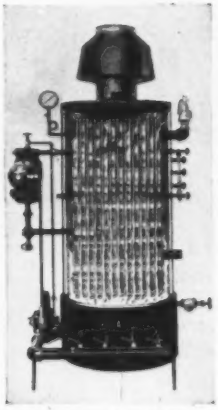
FOR
COATING
AND
LAMINATING

★

J.H. LANE & CO., Inc.

250 W. 57th St. : New York, N. Y.

STEAM —AS YOU WANT IT... WHERE YOU WANT IT



The KANE Boiler is built to A.S.M.E. specifications, in sizes to 30 H.P.

the KANE BOILER PACKAGE

Each KANE BOILER PACKAGE is carefully considered by us as an "individual" job — from the customer's requirements to the finished unit. And each BOILER PACKAGE is a compact, self-contained steam source that includes: the correctly sized KANE Automatic Gas-Fired Boiler complete with gas burner and controls to maintain required steam pressure; and an M-K-O Automatic Boiler Feed system designed to return condensate and supply make-up water as required for highest operating efficiency.

Engineered Steam at its best, with four decades of experience at your disposal — so, send your steam problem to us for study and recommendation.

ENGINEERED STEAM AT ITS BEST

MEARS-KANE-OFELDT INC.

1903-1915 EAST HAGERT STREET, PHILADELPHIA 25, PA.

FOUR DECADES OF AUTOMATIC GAS-FIRED BOILER MANUFACTURING EXPERIENCE.

Production of

FOR THE purpose of this report, production is the sum of the quantities of materials produced for consumption in the producing plant, for transfer to other plants of the same company, and for sale. Sales include only the quantities involved in bona fide sales in which title passes to the purchaser.

The figures of sale given in the present report are not comparable with those for consumption in

PLASTICS AND SYNTHETIC RESIN PRODUCTION
From Statistics Compiled by

Materials	*Total prod'n first 6 mos. 1949*
CELLULOSE PLASTICS:[a]	
Cellulose acetate and mixed ester plastics:	
Sheets, continuous:	
Under 0.003 gage	3,287,350
0.003 gage and over	3,681,612
All other sheets, rods, and tubes	2,161,399
Molding and extrusion materials	25,309,185
Nitrocellulose:	
Sheets	3,571,023
Rods and tubes	788,284
Other cellulose plastics[b]	4,589,922
PHENOLIC AND OTHER TAR ACID RESINS:	
Laminating	20,020,296
Adhesives	11,890,371
Molding materials[a]	57,854,086
Protective coatings (containing less than 10% modifier)	7,902,097
Miscellaneous uses, including casting	20,483,697
UREA AND MELAMINE RESINS:	
Adhesives	17,771,942
Textile- and paper-treating resins	12,183,718
Protective coatings, modified and unmodified	7,711,726
Miscellaneous uses, including laminating and molding[c]	25,221,115
STYRENE AND STYRENE DERIVATIVE POLYMER AND COPOLYMER RESINS:	
Molding materials[a]	82,148,507
Miscellaneous uses[d]	11,767,294
VINYL RESINS:	
Sheeting and film, including safety-glass sheeting[a]	66,766,399
Adhesive (resin content)	5,186,350
Textile- and paper-treating resins, including spreader and calendering types (resin content)	14,089,400
Molding materials (resin content)	33,247,643
Miscellaneous uses (resin content)[d]	9,117,701
MISCELLANEOUS SYNTHETIC PLASTICS AND RESIN MATERIALS:	
Molding materials[a, e]	21,169,948
Protective coatings[f]	21,962,241
All other uses[g]	73,658,236

[a] Includes fillers, plasticizers, and extenders. [b] Includes sheets, rods and tubes, and molding and extrusion materials. [c] Data on resins for laminating and miscellaneous uses are on a dry basis; data on molding materials are on the basis of total weight. [d] Excludes data for protective coatings. These data are included with miscellaneous coatings to avoid disclosure of the operations of individual companies. [e] Includes data for acrylic, aniline-formalde-

Plastics Materials

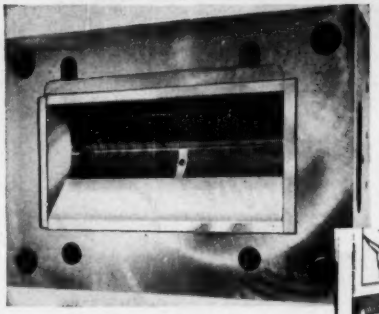
the producing plants plus shipments to other plants given in earlier reports. The figures for production given in the present report, however, would be comparable with figures for consumption in producing plants plus shipments given in earlier reports except for inventory changes. From month to month these changes in inventory may be substantial, but over several months they tend to even out.

IN POUNDS FOR MAY AND JUNE 1949
U. S. Tariff Commission

May 1949		*June 1949*	
Production	*Sales*	*Production*	*Sales*
348,532	334,403	420,047	389,308
733,727	582,744	543,719	541,573
667,908	290,202	278,546	292,142
3,448,614[h]	3,750,680[h]	4,303,366	3,924,825
600,622	502,621	525,180	385,693
153,319	111,759	100,572	136,839
708,567[h]	422,120	175,985	448,782
2,433,231[h]	1,491,055	2,625,554	1,508,248
2,225,414	1,924,656	2,189,303	1,635,300
7,197,285	6,957,001	6,786,662	7,442,141
1,396,478	964,419	1,202,623	942,955
2,972,544	3,429,115	3,350,694	3,786,955
2,855,626	2,931,389	2,577,280	2,802,296
1,328,945	1,343,956	1,799,430	1,686,477
1,125,841	759,226	1,340,951	1,077,971
3,863,990[h]	3,003,861	3,494,894	2,519,670
14,527,403	13,023,810	12,957,354	12,966,426
1,803,724	1,636,090	2,071,875	1,614,929
10,986,269	10,695,954	10,827,542	10,273,692
985,537	832,555	902,895	826,657
2,212,216	1,844,996	2,177,378	2,128,732
4,817,121	5,055,734	5,592,298	5,258,404
1,405,714	621,703	1,136,063	685,579
4,173,018	3,481,138	4,021,285	3,459,597
3,865,884[h]	3,747,637[h]	3,738,985	3,937,626
9,989,326[h]	9,302,222[h]	10,803,705	10,817,429

hyde, polyethylene, nylon and other molding materials. [g] Includes data for coumarone-indene, petroleum polymer and condensation, silicone, and other protective coating resins. [h] Includes data for acrylic, alkyd, coumarone-indene, nylon, petroleum polymer and condensation, silicone and other plastics and resins for miscellaneous uses. [i] The totals given here have been revised from first reports.

IT'S A BREEZE!



Mold made by Newark Die; designed and molded by Sameric Eng'g. Co. for Pottsville Plastics Co.

2-piece interlocking ventilator adjustable to 36 inches.

BUT a clean breeze from this window ventilator, molded of polystyrene. Note how each rib had to be accurate to thousandths. Here's mold making by Newark Die Company that reflects the craftsmanship developed during 30 years of building molds for the plastic industry. We can solve any multiple-cavity-mold problem you've got.

Send for our free booklet, "The Procedure of Die Hobbing"

NEWARK DIE COMPANY

22 Scott Street — Newark 2, N. J.

Stamp Names or Trademarks

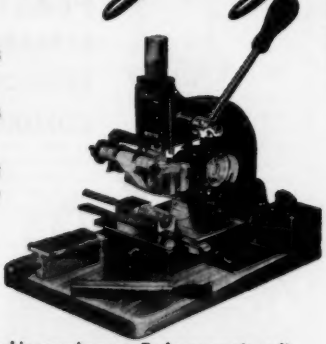
ON YOUR PLASTIC PRODUCTS

with the easy-to-use *kingsley*

Up to 1,000 stampings per hour.

No skilled operators necessary.

Uniform, clean-cut stampings in gold or colors.



Write us about your marking requirements. Enclose a sample or dimensions of part to be stamped. We'll reply air mail with complete details on how a Kingsley Machine can be applied to *your specific need.*

Kingsley STAMPING MACHINE CO.
1606 CAHUENGA BLVD., HOLLYWOOD 28, CALIF.

LOOKING FOR STABLE
Plastic Colors?

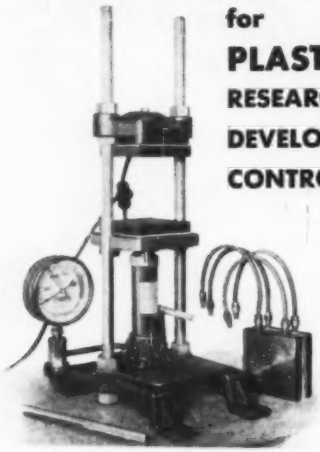
Then you'll want to investigate *Ferro's inorganic colors*—ideally suited for compression and injection molded plastics. Select from full color range. Colors stable (to 2300 degrees Fahrenheit) and highly chemical-resistant. Write for further details and samples.

Color Division

FERRO ENAMEL CORPORATION

4150 East 56 Street *Cleveland 5, Ohio*

THE CARVER LABORATORY PRESS



for PLASTICS RESEARCH DEVELOPMENT and CONTROL WORK

Send for latest catalog describing the Carver Laboratory Press and some of its many applications in the plastics industry

FRED S. CARVER INC.
HYDRAULIC EQUIPMENT
343 HUDSON ST. NEW YORK 14, N. Y.

Car Window Screens

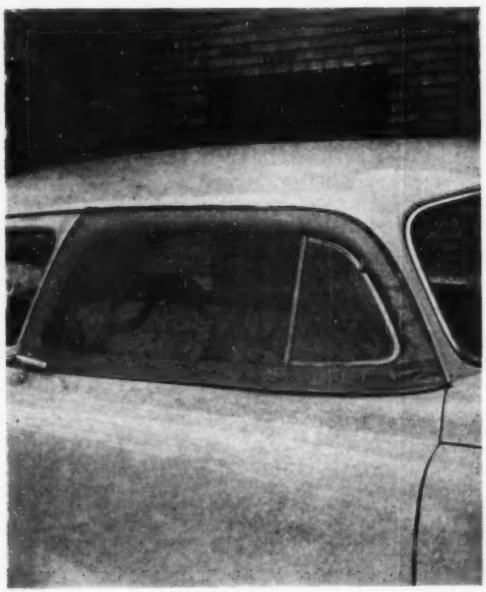
OWNERS of the 1949 Nash Airflyte, the car whose back seat makes up into a pair of full-size twin beds, can now get protection against mosquitoes and other insects with saran window screens. Clarvan Corp., Milwaukee, Wis., makes the screens of Lumite, a product of Chicopee Mfg. Corp., New York, N. Y.

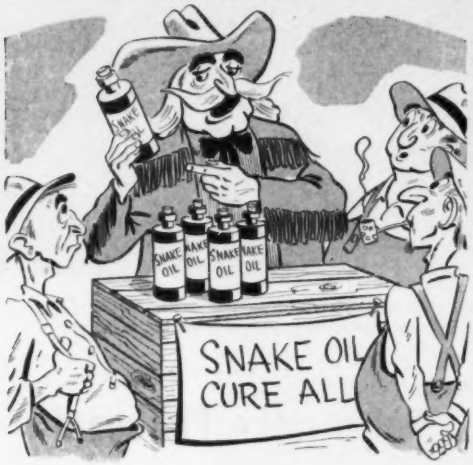
Easy to install

The saran screens are rustproof, stainproof, and simple to install. The screening has a leatherette binder tailored to grip the edge of the door. The screen assembly is pulled down over the door glove-style, and the screen is held snugly in place by means of an elastic band, 1¼ in. wide, which clips over the door handle. Shutting the car door places a tension over the door edge which holds the screen in place. Thus, the car's windows may be rolled all the way down without providing an opening for the insects to get through. The doors can be opened and closed without removing the screens.

The plastic screens are sold as an accessory through all Nash dealers. When the screens are not in use, they can be rolled up in the mattress bag along with the bed mattresses and stored conveniently in the luggage compartment.

When twin beds in the back of Nash are in use, sleepers can be protected from insects by saran screens on windows





PLASTICS ISN'T SNAKE OIL

PEOPLE don't buy plastics the way they buy Old Chief Crow Feet's sure-cure for horses and humans. But lots of people still think the word *plastics* is magic.

It isn't, of course. If it were, we could forget all about our long years of experience as custom-molders, and start making plastic hot dogs for the novelty stores.

Pick the right plastic for the right job, and you've really got something. And if you haven't spent a great big chunk of your life custom-molding plastics, you need somebody who has. You need somebody who knows all plastics from the inside out—not some blue-sky authority.

Your custom-molder is an all-around expert. Maybe that blue-sky plastic won't mold into the shape you want. A custom-molder can give you the real low-down. We're all for your asking a custom-molder—why not us? We've been one for these many, many years.

THE BOONTON MOLDING COMPANY

Boonton

Boonton 3, N. J.
Boonton 8-2020
Est. 1921

MOLDERS OF MOST PLASTICS BY MOST METHODS

Which PRECISION Handpiece is best suited for YOUR INDIVIDUAL requirements?

–FOREDOM HAS IT!

Which FLEXIBLE SHAFT Machine is best for YOUR SHOP requirements?

IT'S THE FOREDOM!

THE VERSATILE 5!
5 quickly interchangeable handpiece types to suit your individual requirements. Pencil-sizes and larger, some with flexible wrist—see arrow below.

PRECISION CONTROL
is yours on every job because the small-size handpiece KEEPS YOUR WORK WELL IN VIEW.

It's FOREDOM all the way! Because only Foredom is engineered to give the utmost in versatility and adaptability. With your choice of the 5 handpieces shown above, you get unexcelled adaptation to the particular job. You get finger-tip control. You get into those "hard-to-reach" places because of the small handpiece size. Remember, only Foredom gives you matchless adaptability . . . It's your chance to use the *right* tool for the job. Foredom Machines, with their precision made handpieces are teammates in Perfection. Extra good flexing qualities in the shaft assemblies provide deft, sensitive control of your work.

FOREDOMS ARE TOPS FOR EVERY LIGHT GRINDING, FINISHING and DEBURRING JOB

Foredoms can be profitable additions to all THREE DEPARTMENTS—PRODUCTION, MAINTENANCE, and TOOL. There's no limit to Foredom's amazing adaptability in providing the right handpiece for the job. Every shop needs one or more! Quality tested for more than a quarter century, the FOREDOM line includes "hang-up" models as illustrated, and easy-portable bench models. Foot rheostat is standard with most of them. Motor driven models start at $16.95. Also available are flexible shaft tools complete with handpieces for attachment to your own motor, drill press or electric drill at prices as low as $5.95—ALL PRECISION BUILT. Get valuable information, send for our catalog #N-3822.

Foredom Electric Co., Dept. N-3822
27 Park Place, New York 7, N. Y.

Please send us your catalog N-3822 showing the different uses of Foredom Flexible Shaft Machines.

Name .....

Address .....

City & Zone ..... State .....

OVER 50 YEARS AGO

the Atlas Valve Company began making regulating valves. We have been at it ever since, and it has been our sole business—regulating valves for every service.

For the comparatively new plastics field our outstanding regulating valve is shown at the right, the

ATLAS Type "E"

High Pressure Reducing Valve

This valve *easily* reduces the highest pressures—as high as 6,000 lb. per sq. in., and WITHOUT SHOCK. Whether the fluid is air, water, or oil, makes no difference.

"What is the trick?", some plastics men have asked. "Why is it so much better?" There is no "trick". Just more than 50 years of KNOW HOW. Take, for instance, the body of Type "E". It is not a "trick" body. It is simply made of the strongest forged steel. In addition, all of the internal metal parts are of hard chromium plated stainless steel. A formed packing of special material superior to leather is used which is immune to all fluids commonly used in hydraulic machinery. The pressure on the seat is balanced by a piston with the result that variations in high initial pressure have little effect on the reduced pressure. We will gladly send complete description and data.

For other ATLAS plastics plant products see the partial list in our ad in the January 1949 issue of MODERN PLASTICS

ATLAS VALVE COMPANY

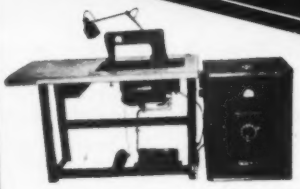
REGULATING VALVES FOR EVERY SERVICE

277 SOUTH ST., NEWARK 5, N. J.

Represented in Principal Cities

MAYFLOWER ELECTRONIC GENERATORS

Generators of 250 watts to 15 kilowatts, at frequencies best suited to furnishing a basic source of radio frequency heat for average applications.



Electronic Bonding Machines

Manufactured under R.C.A. Patents

Single or dual wheel applications for electronic sealing of thermoplastic film and sheet at speeds to 50 ft./min. Binds, hems, straight seals or turns.

- ELECTRONIC BAR SEALERS for fast permanent seals. 30 different press sizes available.
- AUTOMATIC GROMMET AND BUTTONHOLE MACHINE for reinforcing rainwear and similar applications.

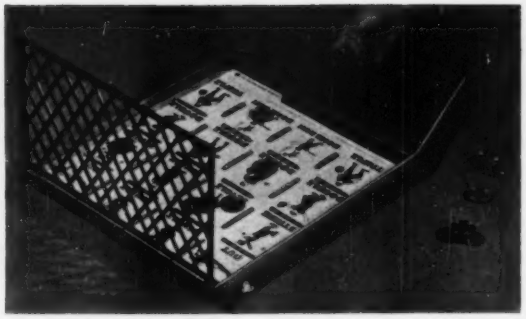
Our engineers analyze every application where electronic heat is required in a plant and fit the equipment to "overall" requirements and not to a single job.

SUBMIT YOUR PROBLEMS FOR SPECIFIC RECOMMENDATIONS

Mayflower Electronic Devices, Inc.

6014 Hudson Boulevard, West New York, N. J.

Union 3-7100



Cardboard templets can be changed to provide a variety of games to be played with polystyrene board, net, and chips

Polystyrene Playboard

TWELVE games in one are provided in Flip-A Scor, a playboard game manufactured by McKenzie Playthings, Inc., New York, N. Y. Six cardboard templets with a different game on each of the 12 sides can be interchanged on the polystyrene playboard to provide the variety of games. In addition, the company issues a new set of templets every two months through its Games of the Month Club.

Besides the playboard and templets, the game includes a backstop or net of black polystyrene, and 16 red and green polystyrene chips.

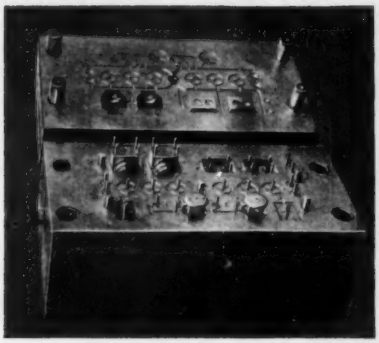
H. Jamison, Freeport, N. Y., molds the plastic parts using Koppers polystyrene. The chrome plated dies were built by John Kunst Co., New York; prototypes of the playboard and net were made by Toni Santore, A. S. Plastic Model Co., New York.

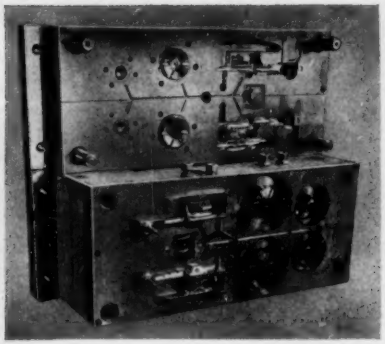
The playboard is molded in red, orange, or green polystyrene in a one-cavity mold on a 12-oz De Mattia injection machine. The board weighs 8 oz. and measures 17⅝ in. from front to back, 9 13/32 in. wide, and has a wall thickness of 0.075 inch.

The backstop or net weighs 1 oz. and is molded in a two-cavity die on an 8-oz. press. It is 9 11/33 in. wide and 5 in. high. The lid of the container is laminated with a cellulosic preparation by Laminators, Inc., Worcester, Mass. The glossy finish increases the life of the box and adds to the game's counter sales appeal.

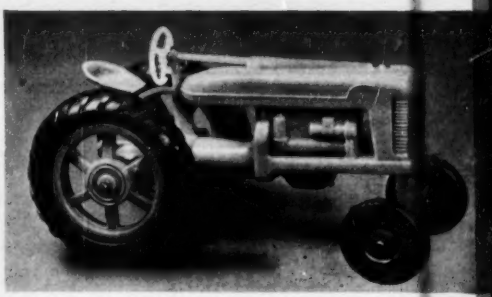
The 12 games on the six templets are baseball, football, bowling, racing, object matching, color matching, archery, bingo, tic tac toe, spelling, adding, and safety. Players select the desired templet and fit it over playboard grooves which divide the board into 16 squares. A player then flips the chips one at a time with his finger, against the net. Scores are determined by the squares in which the chips fall.

WINDSOR-made molds like these





produce PRECISION-DETAILED MOLDINGS LIKE THESE



Whether the mold in question is for a scale model toy, or for an intricate component of a vital piece of machinery, the painstaking skill and precision workmanship which Windsor craftsmen put into its construction is identical.

Windsor-made molds for thermoplastics take full advantage of the capabilities of your molding machine and the material you will use. They're accurately machined to the tolerance required. They're polished to perfection to insure moldings with flaw-free surfaces. What's more, Windsor's vast experience with molds of all sizes for every plastic material frequently suggests design alterations which result in greater molding economy, easier assembly, stronger, more serviceable finished pieces.

As one of the world's largest producers of fine injection molding machinery, Windsor is equipped in every respect to produce your molds with the utmost efficiency and precision. Sketches, models, blueprints or plans, together with complete details should be sent to facilitate estimates. *Write without delay.*

R. H. Windsor, Ltd., is the exclusive manufacturer of the world-famous L.M.P. double screw compounder-extruder for the British Empire, the United States and South America (Brazil excluded).

R. H. Windsor Ltd.

16 Finsbury Square, London, E. C. 2, England

Cables: TECHNIMACH, LONDON

For Mixing and Kneading Heavy Plastic Materials...it's

Designed and engineered to meet the requirements of the Plastic Industry. Charles Ross & Son Co. mixers are available for capacities of 5 gallons and upwards. Write for technical and production data.

CHARLES ROSS & SON COMPANY
Manufacturers of Mixing and Grinding Machinery Since 1849
154 CLASSON AVENUE BROOKLYN 5, N. Y.

ALL PURPOSE STAMPING FOILS

pigment roll leaf
imitation gold roll leaf
aluminum roll leaf

for hot stamping on plastics

- clean, sharp impressions
- uniform performance
- greater permanence

Test samples of flexible All Purpose foils in your own hot stamping press. Write for them. No obligation.

ALL PURPOSE GOLD CORP.
Box 81, Brooklyn 1, N. Y.
Telephone: TRiangle 5-6266-7
NEW YORK BOSTON CHICAGO

Make-up Guide

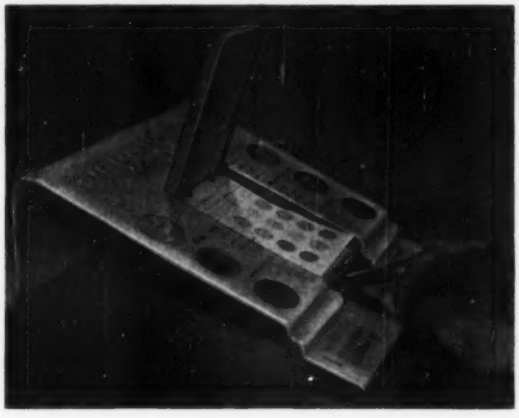
A WOMAN can determine at a glance what shade make-up foundations and face powders are most flattering to her complexion type with the Complexion Colorama guide developed by Helena Rubinstein, New York, N. Y., to promote sales of its Silk-Screen powder and Silk-Tone foundation. The unit, designed by Ladislas Medgyes, consists of a polystyrene index built into an acrylic stand.

The index, which is actually a converted telephone index, is molded especially for Helena Rubinstein in a milky-white Bakelite polystyrene by Zephyr American Corp., New York. However, instead of the regulation cards inside, the index contains pages on which the various colors of make-up are illustrated. These pages are Kromekote, made by Champion Paper & Fibre Co., New York. Paint Print Process, Inc., New York, silk screens the 55 skin tones on them.

The Plexiglas stand, also a milky-white color, is fabricated by Blue River Plastics Mfg. Corp., New York. Instructions on how to use the guide are silk screened on the acrylic.

The guide is quite easy to use. A customer first checks the acrylic background to find the proper category according to the color of her hair— blonde, medium-brown, brunette, silver-gray, or red. Under each of these categories are listed the four main skin colors: ivory, golden, pink cast, and sun-tan. A line connects each to the proper setting of the index selector knob. Pressing the knob causes the index to spring open to the page showing the proper type of make-up for the skin color and hair color which have been selected.

Polystyrene telephone-type index in an acrylic base helps woman pick proper shade of face powder for her complexion



PLASTIC SCRAP

WE BUY IT
SELL IT
PROCESS IT

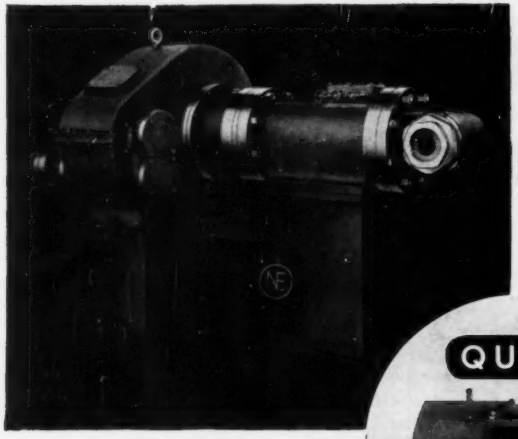
Plastics Division:

H. MUEHLSTEIN & CO. INC.

122 EAST 42nd STREET, NEW YORK 17, N. Y.

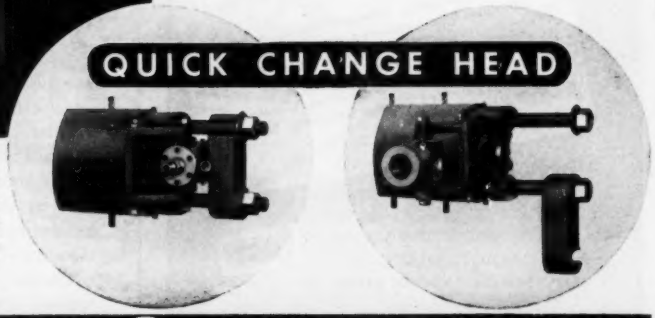
BRANCH OFFICES: Akron • Chicago • Boston • Los Angeles • Memphis

WAREHOUSES: Jersey City • Akron • Boston • Los Angeles • Memphis



NE TUBERS *adaptable to*

variety of products. Illustrated at left is a 4½" NE tuber equipped with cross-feed flanged-type head for insulating wire, extruding hose covering, special shapes or tubing. With slight modifications, either rubber or plastics can be handled.



NE Quick Change Head Unit permits swinging Die Head out, for cleaning, inspection or changing. Just loosen 2 bolts. This feature illustrated on a 3½" NE Tuber is available on all sizes thru 6".

NATIONAL-ERIE CORPORATION

ERIE, PA. U. S. A.

· SINCE 1939 ·

VIBRA-VEYOR

for drying and preheating plastic powder in injection, extrusion, and compression . . . AND NOW

FOUR NEW MODELS

NAME	CAPACITY (Lbs. per hr.)
1 TUMBLE-VEYOR	2 & 4 oz.—10
2 HOT-AIR-VEYOR	8 oz.——40
VIBRA-VEYOR	4, 8 & 16 oz.—80
3 SPIRAL-VEYOR	16 oz. & over—500
4 ROTO-VEYOR (operated by molders between cycles)	Compression preforms. Has timers, controls, portable pedestal and "serving trays"

THE MISKELLA *Infra-Red* COMPANY
Designers-Manufacturers of
INFRA-RED OVENS · APPLIANCES · SECTIONAL UNITS · MACHINES AND CONVEYORS
MAIN OFFICE AND LABORATORY
EAST 73rd AND GRAND AVENUE
CLEVELAND 4 OHIO

Colors FOR PLASTICS

- Low cost, high hiding and easy dispersion are economy factors.
- Mapico Colors are light-fast, chemically stable and of very fine particle size.
- They are carefully controlled for close uniformity in physical and chemical characteristics.
- Use of properly balanced stabilizer combinations where required makes possible successful employment of rich hued Mapico Colors in a wide variety of plastics.
- Use them for textile finishes, simulated leather, extruded weather stripping, flooring and other products.

MAPICO COLORS
IRON OXIDE COMPOUNDS OF EXCEPTIONAL PURITY
Our technical staff is at your service
COLUMBIAN CARBON COMPANY
MAGNETIC PIGMENT DIVISION
MANUFACTURERS
BINNEY & SMITH CO., *Distributor*
41 East 42nd Street · New York 17, N.Y.
YELLOWS • TAN • REDS • BROWNS • BLACK

Tags at left consist of printed acetate sheet laminated between two transparent acetate sheets. Tags at right are made of blue acetate sheet with silk-screened copy

Tags for Fur Coats

FUR coats are quality merchandise, and everything around them must reflect that quality. A little thing like a torn or shopworn tag, for example, can inject a jarring note of shoddiness. For this reason, manufacturers of fur coats have always been willing to pay for good-looking, durable tags. To get the quality tags they want, some manufacturers are now turning to plastics.

Before the war, the standard material for fur coat tags was brass. War-time shortages of metal brought about a shift to aluminum foil. Both of these materials were sufficiently durable for the job, but both had printing and color limitations.

Now, Talmadge Printing Co., New York, N. Y., a manufacturer of paper tags and labels, has developed a line of cellulose acetate tags which combine the required beauty with unlimited printing possibilities and excellent durability. The new tags are only slightly more expensive than aluminum foil tags, and cost less than brass.

Two types of tags

One type of tag made by Talmadge consists of a sheet of clear cellulose acetate which is printed on both sides, then laminated between two other transparent acetate sheets. The laminating is done on a Carver Laboratory Press and the finished laminate is 0.010 in. thick.

An example of this type of tag is the one used by Quality Fur Dyeing Corp. The use of a halftone illustration adds to the beauty of the tag.

Another type of plastic tag is made for Oakland Fur Dyeing Co. This tag consists of a single sheet of blue acetate 0.012 in. thick with the copy silk screened on it in white.

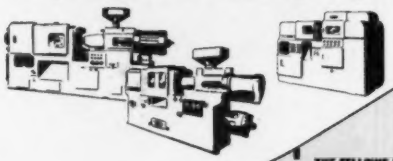
Balanced Efficiency

Super-reliable Clamping

"Speed-Flo" Cylinder

Speed-Flo is plasticizing speed, efficiency and power wattage economy—yes, but not that alone. "SPEED-FLO" is the combination, also, of still other exclusive design advantages, such as: plunger pre-positioning for faster molding, with clock-controlled booster; self-centering die clamp; toggle pins in compression instead of shear. Too, Fellows gives you variable injection pressures and a change-speed injection stroke. All models have built-in pyrometers—thanks to Fellows engineering . . . There's so much of practical, pocket-book advantage here that every molder should investigate—IN DETAIL. Use the coupon.

Fellows
LEOMINSTER
injection molding equipment



Interested?

Sign below, and let us send you complete catalog information.

Name_____ Title_____

Company_____

What capacity machine most interested in?_____ Oz._____

Street Address_____

City & State_____

THE FELLOWS GEAR SHAPER CO., Plastics Machine Div.: Head Office and Export Dept., Springfield, Vermont. Branch Offices; 616 Fisher Bldg., Detroit 2. 840 West Town Office Bldg., Chicago 12. 7706 Empire State Bldg., New York 1. New England Distributor; Leominster Tool Co., Leominster, Mass

So Simple Anyone can

ENGRAVE

on Plastic and Metal

NEW HERMES PORTABLE

Send for descriptive folder.

The handy, accurate machine that every plant NEEDS for speedy production lettering of name plates, small panels, novelties, serial numbers, part numbers, etc.

NEW HERMES

13-19 University Place • New York 3, N.Y.

IN **REZ-N-DYE®**

(Cold Dip Dye)

COLORS YOUR *PLASTICS*

NO HEAT! NO MIXING!

Simply dip in dye, rinse in water, wipe dry. Colors plastics permanently in a matter of seconds. Original polish not affected by dye. Only $3.65 a gallon, f.o.b. factory.

21 BRILLIANT COLORS

Send for trial gallon today!

***Schwartz* CHEMICAL CO., INC.**

326-328 WEST 70th ST., NEW YORK 23, N. Y.

Magnifier Sales Boosted

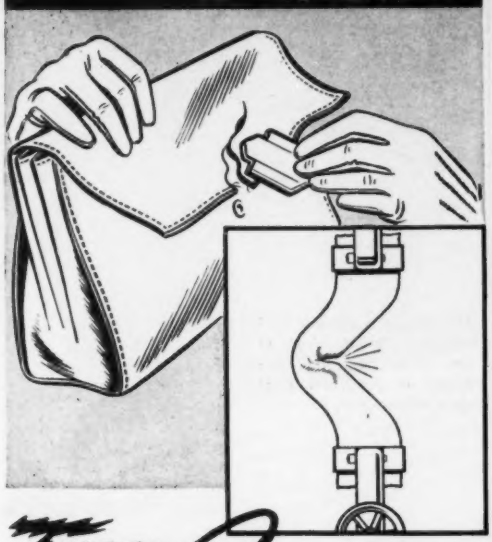
BY lifting its folding magnifying glass from an assortment of small merchandise on store counters and in windows and placing it on a small acrylic display stand, Edroy Products Co., New York, N. Y., has boosted sales by 100 to 400 percent. Until the display was introduced, the magnifier was sold mainly in optical goods stores. Now it is carried by drug stores, book stores, stationery stores, gift shops, department stores, etc.

Designed by Paul Smith, of Paul Smith Advertising, Inc., the display has a black Lucite base and clear Lucite legs, back, and magnifier holder. It is fabricated by Pat Plastics, Long Island City, N. Y. The background is engraved with Edroy's slogan and the price. A printed sales talk is mounted on the background and the magnifier set at such an angle that a potential customer can read the enlarged panel of type instantly.

Acrylic was selected for the stand because its smart appearance makes it acceptable in the most exclusive jewelry store. The main selling features of the magnifier are also pointed up — the folding plastic case, pocket clip, the sharp quality of the magnification, and the fact that the magnifier is wide enough for a column of newspaper type to be read at a glance. Sterling Plastics Co., Union, N. J., molds the magnifier case of cellulose acetate.

Magnifier with case of cellulose acetate is displayed on an acrylic stand. Acrylic points up selling features of magnifier

TESTED IS TRUSTED



TEAR Resistance

*Scott Tester Model J tests for tear, elongation and tensile strength of plastic films, metal strip, wire, paper, leather, textiles, etc., with capacity up to 500 lb. Also provides burst test. World-standard tests; "picturized" graph results.

"Adequate Testing Always Pays"

*Registered Trademark

SCOTT TESTERS, INC.

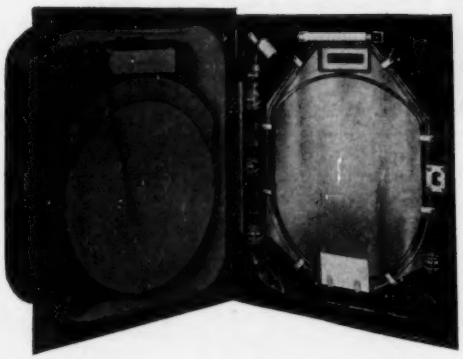
96 Blackstone St., Providence, R. I.

Standard of the World

WHAT'S NEW IN AUBURN Plastics

A molded door for instruments manufactured by Penn Industrial Instrument Corporation of Philadelphia.

Molded from an impact type phenolic material, the 16" x 20½" door of this Hays-Penn Flow Meter was designed by Penn and Auburn. It weighs 3¼ pounds. Internal bosses provide bases for mounting a fluorescent light, ink bottle holders, and the gasketed glass panel. A molded insert, reducing the size of the opening, adapts the door for use on the Penn Recorder-Controller, an entirely different instrument.



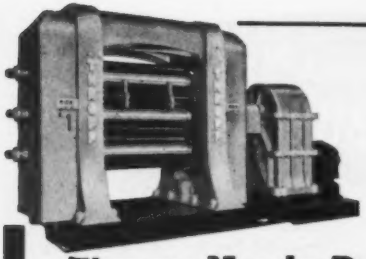
ADVANTAGES: Ribbed for strength, the door has good dimensional stability. Its flatness is important for precision instrument operation. Dust and moisture are excluded by all-around gasketing, plus a phenolic dust cover cemented to the top of the case flange. The properties of the phenolic material permit use under atmospheric conditions that would attack metals and finishes; the door serves as an insulating base for the electrical circuits it contains. No surface finishing is required; the smooth semi-matte surface is obtained in the molding process.

Successful solution of the problems involved in the proper design and production of this piece is typical of the "know-how" Auburn has developed in 73 years of experience. Whenever you have a problem in plastics, write Auburn Button Works, Inc., 600 McMaster St., Auburn, N. Y.

COMPRESSION, TRANSFER AND INJECTION MOLDING, AUTOMATIC ROTARY MOLDING FOR MASS PRODUCTION, EXTRUDED VINYL OR ACETATE TUBES AND SHAPES, MOLD ENGINEERING AND COMPLETE MOLD SHOP

Auburn Button Works, Inc.

MOLDERS SINCE 1876 • AUBURN, NEW YORK



Thropp Newly Designed Heavy-Duty Calenders

. . . for Plastics, Available in Three and Four Roll Types

Illustrated above is the latest Thropp 24" x 66", 3-roll (or 4-roll) heavy duty Calenders.

Some of the outstanding features included in these new calenders are: direct drive, eliminating master gear and pinions; roll necks mounted on self-aligning roller bearings; circulating roll neck lubrication which will withstand exceptionally high temperatures; all cut herringbone tooth gears; enclosed, roll adjusted mechanism; ease of control and minimum maintenance. For full details, send for specification folder.

- *West Coast Rep.:* H. M. Royal, Inc., Los Angeles, Cal.
- *Export Agent:* Steinhardter & Nordlinger, 105 Hudson St., N. Y.

THROPP

WM. R. THROPP & SONS CO. Trenton, N.J.

You can Depend on

MICHIGAN

for

MOLDED PLASTICS

M

With more than a quarter-century experience in the development and production of all types of plastic parts, Michigan Molded offers years of experience—dependability—high competence—complete engineering staff—most modern production facilities.

Your inquiries will receive prompt consideration

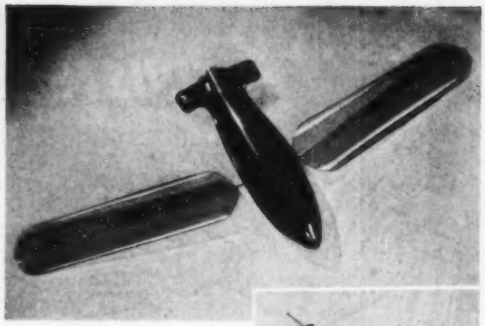
MICHIGAN MOLDED PLASTICS, INC.

DEXTER, MICHIGAN

Sales Offices

Buffalo, Chicago, Cleveland, Detroit, Minneapolis, Moline, New York, Norfolk, Philadelphia, St. Louis, Springfield, Mass., Waukesha, Wisc.

COMPRESSION • INJECTION • FABRICATION



The two-piece fuselage and the two rotating wings of the ½-oz. toy plane are formed of polystyrene sheet which measures 0.0075 in. thick

Toy Plane Weighs ½ Ounce

THE high strength-weight ratio of thin polystyrene sheet is used to advantage in a new revolving-wing toy airplane. The toy, called the Skyroplane, flies in even a mild wind and can be let out on a thread like a kite. The wind makes the wings revolve, lifting the plane. As the wings revolve, they make a clicking and buzzing motor-like noise. The plane weighs only ½ oz., and will fly as high as it is permitted to go by the available thread, according to the manufacturer.

The Skyroplane is made by Skycraft Mfg. Corp., Long Beach, Calif., of Polyflex, a polystyrene sheet stock material extruded by Plax Corp., Hartford, Conn. This material was chosen for its light weight and dimensional stability under varying weather conditions. With the exception of the wire arm holding the wings, a clip, and some grommets, the entire plane is made of transparent red Polyflex.

The sheet stock used is 0.0075 in. thick. Two formed pieces are cemented together to form the 9-in. long fuselage. The wings are formed to a compound curve and holes are punched in them so that they can be slipped over the wire wing arm. The finished plane has an 18-in. wingspread.

The four polystyrene parts which make up the plane are formed on an automatic machine which is capable of turning out the four parts in 45 seconds.

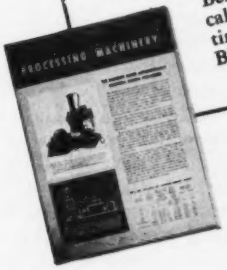
Size of Machine	Net Volume of Chamber Cu. Ins.	Approximate Capacity Stiff Paste Pounds per Batch Factor x Specific Gravity	Motor Horsepower Standard and Double Speed	Approximate Floor Space Length	Width
B	103	Sp. Gr. x 2.5	Four Speed 8½/12½ 17/25	8'0"	3'0"
00	263	Sp. Gr. x 4	15/30	10'0"	4'6"
1	1193	Sp. Gr. x 24	50/100	12'0"	5'10"
1-A	1193	Sp. Gr. x 24	50/100	14'8"	6'0"
3-A	4315	Sp. Gr. x 100	150/300	23'0"	10'0"
3-A Uni-Drive	4315	Sp. Gr. x 100	150/300	25'0"	10'6"
11	14940	Sp. Gr. x 300	300/600	34'0"	13'6"
11 Uni-Drive	14940	Sp. Gr. x 300	300/600	32'3"	11'0"*

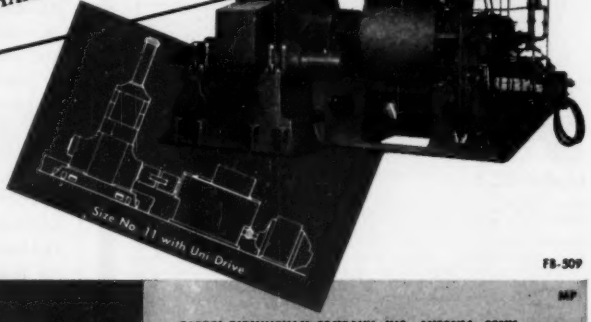
THERE'S A BANBURY SIZE TO SUIT YOUR NEEDS EXACTLY

Banbury mixers are made in eight standard sizes for processing plastics, from the size B for laboratory or small production work to the No. 11 with its net chamber capacity of 14,940 cubic inches. With such a range of machines to choose from, you can select the mixer that will provide the production you require.

Furthermore, Farrel-Birmingham engineers have developed other production units, such as extruders, warming and sheeting mills, and calenders, which are *matched in capacity* with the various sizes of Banburys. This means that a layout can be *engineered* that will eliminate the "choking" or "starving" of any machine in the line. Production can be *designed* to flow without costly interruptions and with manual aid and supervision reduced to a minimum. Isn't this worth investigating?

Before you purchase new processing equipment, call in a Farrel-Birmingham engineer. In the meantime, send for a copy of *NEW* bulletin, "FARREL-BIRMINGHAM PROCESSING MACHINERY."





Size No. 11

Size No. 11 with Uni-Drive

FB-509

MP

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn.; Buffalo, New York

Sales Offices: Ansonia, Buffalo, New York, Boston, Pittsburgh, Akron, Chicago, Los Angeles, Tulsa, Houston

Farrel-Birmingham

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.

Please send me, without cost or obligation, a copy of your *new* bulletin No. 188 "FARREL-BIRMINGHAM PROCESSING MACHINERY."

Name..... Title.....

Company .....

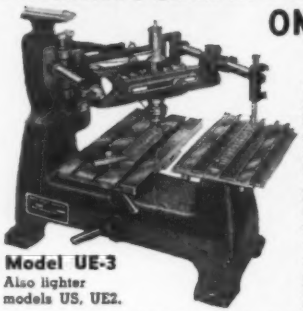
Address .....

City..... State.....

Pearl Essence

THE
MEARL
CORPORATION
153 Waverly Place New York, N. Y.

For PANTOGRAPHIC ENGRAVING ON PLASTICS

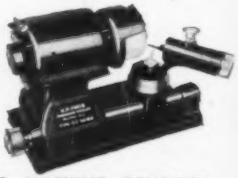


Model UE-3
Also lighter models US, UE2.

Panto Engravers rugged and precision-built, for accurate and clean-cut engraving on plastic and metal products.

Depth Regulator, available with all models, produces a uniform depth of engraving on irregular and curved surfaces. **Forming Guide,** on the UE-3 only, for use on curved, spherical, and beveled surfaces.
Engraving cutters, master copy type, fixtures, and endless round belts, for all types of engraving, die and mold-cutting machines.

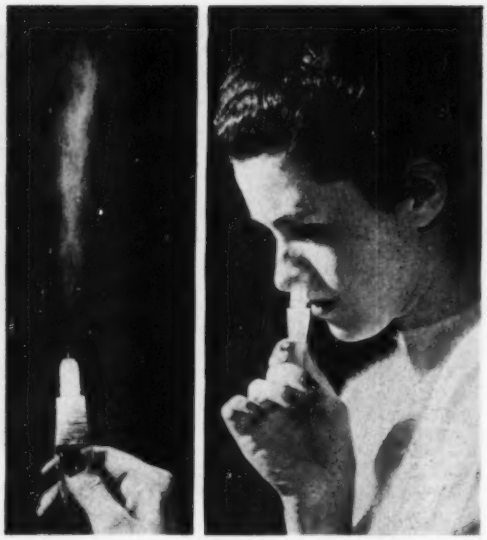
MODEL CG GRINDER for quick and accurate sharpening of engraving and routing cutters.



Write for illustrated catalog

H. P. PREIS ENGRAVING MACHINE COMPANY
653 ROUTE 29 HILLSIDE, NEW JERSEY

MARKING PANTO EQUIPMENT



Molded polyethylene spray dispenser holds ¼ oz. of nasal medicine. Bottom of tube is closed by heat sealing

Nasal Spray

A SPRAY dispenser package which may well find wide application in the drug fiield has been developed by Ciba Pharmaceutical Products, Inc., Summit, N. J., for its Pyribenzamine, an anti-histamine solution used to treat nasal allergies. The package, which is shaped much like a conventional collapsible tube, consists of an injection molded polyethylene tube with a wall thickness of 0.020 in. and an integrally molded nozzle.

The bottom of the flexible tube is heat sealed after molding on special equipment made by W. T. LaRose & Assoc., Inc., Cohoes, N. Y. An extruded polyethylene tube and a stainless steel spray tip are friction fitted into the aperture in the nozzle.

The dome-shaped closure for the package is molded of light green polyethylene. It fits flush with the outside of the tube and has a conical projection on the inside which seats against the spray tip to form a leak-proof seal.

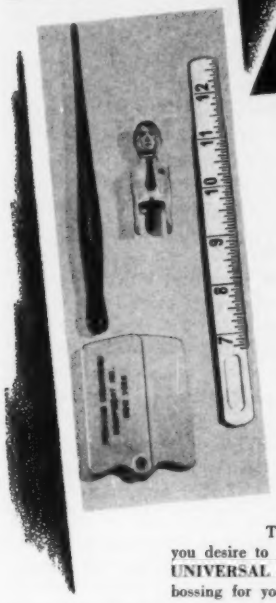
Boonton Molding Co., Boonton, N. J., molds the tubes of Bakelite polyethylene in a 16-cavity die, and molds the closures of Du Pont polyethylene in a 20-cavity mold. The polyethylene capillary tubes are extruded by Jessal Plastics, Inc., Hartford, Conn.

The tube contains ¼ oz. of the medicine, or enough for 400 applications. Tests have shown that the tube walls can stand 1200 flexes, or three times as many as necessary to empty the tube.

Color Inlaying of all plastics

NOW! UNIVERSAL STAMPOMATIC

with "Cushioned Impression" for trouble free operation



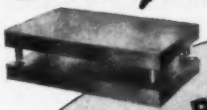
You've never seen the equal of the UNIVERSAL STAMPOMATIC for efficient, perfect color embossing and inlaying of your plastics products. Because it operates by compressed air power, it delivers a "cushioned impression" that *eliminates* breakage of the items being stamped.

- Adjustable speed — up to 40 impressions per minute.
- Plain embossing, or single or multi-color inlaying.
- Thermostatically controlled head for positive temperature control.
- Self-compensating for variations in thickness.
- Adjustable dwell under impression.
- Foot switch control — leaves operator's hands free for feeding and removing stock.
- Safe — automatic sliding bed is standard equipment.
- One way or criss-cross automatic roll leaf feeders — optional equipment.

Tell us which plastic materials you desire to mark. We'll rush samples of UNIVERSAL STAMPOMATIC color embossing for your inspection. Write at once.

PRINTING INDUSTRIES EQUIPMENT, INC.
135 West 20th Street New York 11, N. Y.

Slash Your Mold Costs!



FINISHED PLATES for the cost of ROUGH FORGINGS

Use **STANDARD PLATES** *and* **BASES** *made of*

NEW DME NO. 2 STEEL

A harder, tougher alloy steel especially compounded to DME specifications. Available in all sizes.

2 LARGE PLANTS FOR FAST SERVICE

WRITE FOR COMPLETE CATALOG P-1

DME DETROIT MOLD ENGINEERING COMPANY
DETROIT 12, MICH. • HILLSIDE (Near Newark), N. J.

SINDAR *Corporation*
Industrial Aromatics and Chemicals
330 West 42nd Street, New York 18, N.Y.
Branches: Philadelphia • Boston • Cincinnati • Detroit
Chicago • Seattle • Los Angeles • Montreal • Toronto

FILLERS

WOOD FLOUR

COTTON FLOCK

of superior quality

CLEANLINESS

LOWEST PRICES

DEPENDABLE SUPPLY

UNIFORM PARTICLE SIZE

CONTROLLED RESIN CONTENT

CONTROLLED MOISTURE CONTENT

from the nation's no. 1 supplier

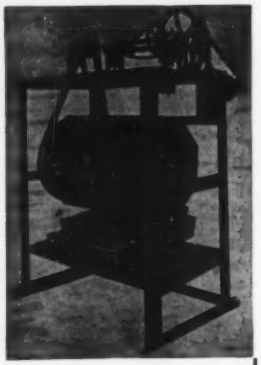
BECKER, MOORE & CO., INC.

NORTH TONAWANDA • NEW YORK

POLISH THE LUPO AUTOMATIC WAY

LUPO METHODS SAVE UP TO 85%

You can usually save more than 60% in the process of plastic finishing when you use Lupomatic barrels and the modern Lupo Procedure. The purchase of a Lupomatic installation from us entitles you to the expert advice of Joseph Lupo.



Mr. Lupo, who has over thirty-five years of experience in designing tumbling equipment and manufacturing compounds for the plastics and metal industries, heads our organization.

Send us your samples for a free demonstration . . . learn how you can improve your product, save time, space and money. Let us chart a tumbling procedure which will work with your production schedule.

LUPO RESEARCH LABORATORIES

99-111 COLUMBUS AVENUE

Tuckahoe, New York

Reinforced Polyesters

(*Continued from page* 76)

high tool cost will not militate against the plastics. The same argument is in favor of these materials in industrial and business machine housings. Completely standard lines of trays, tote boxes, and other carrying units may be expected shortly.

The luggage field, in which the use of reinforced plastics suffered to some extent by mistakes made by low-pressure molders, now appears to have better possibilities, and these have now been extended to musical instrument cases such as are molded by Auburn Button Works, Inc., Auburn, N. Y., for Komold Case Co., Philadelphia, Pa.

The General American Transportation chair opens up possibilities in the furniture field and here it is quite probable that preforming will come into play. Large wheel toys in which the runs will be medium in length are another good bet. The sign and display field is still open to these materials and methods.

In bigger pieces, it seems likely that the U. S. Navy's large plastic boat program and work being done by independent boat makers will result in production runs of boats more than 30 ft. long. Almost a certainty in large pieces will be a molded telephone booth, and already in pilot stage is a complete reinforced plastic refrigerator interior including the breaker strips!

And what of the laminates?

There are three continuous laminators generally known to be in fair production today. According to L. S. Meyer, manager of Plastics Div., Western Products, Inc., Newark, Ohio, operational efficiency of continuous laminators has increased markedly in the past two years. More consistent raw materials, improved techniques, and better equipment, now permit regular production runs with less than 10% rejects. Both fillers and resins for continuous laminating have dropped in cost, but some papers and cellophane (the usual carrier sheet used) have increased in cost. It is unlikely that costs will go up on all of them in the near future.

The continuous laminating industry could produce on existing equipment 2,000,000 sq. ft. of laminate per month. Current production is approximately 500,000 sq. ft. of laminate per month—so the big markets await.

The potential sales volume for continuous laminates of the polyester-paper type is great because of their ease of handling and fabrication on the job. With these laminates, sheets as thin as 1/32 in. are practical to handle. They can be sanded on the back and applied to core materials which have surfaces smooth enough to avoid telegraphing of wood grain. Figure 11 shows a 12-ft. sink assembly in which the application was based on this thin laminate technique plus the postformability of the laminate. The

JOIN THE BIGGEST SINGLE EFFORT EVER MADE TO SELL PLASTICS TO AMERICAN INDUSTRY

Come January, the plastics industry will be presented with the most powerful sales aid ever placed in its hands. On every score—subject matter, volume of editorial content, circulation and format—the January issue of MODERN PLASTICS will measure up as the most significant edition ever published.

SOLE OBJECTIVE: TO SELL AMERICAN INDUSTRY ON PLASTICS

The January issue will be an out-and-out, meticulously documented promotion piece aimed at *proving* the indispensability of plastics to every segment of American industry.

Complete in this one issue—and with DOUBLE the normal amount of editorial material—will be an industry-by-industry, product-by-product analysis showing HOW and WHY plastics build better products, better value, better performance, better appearance or lower price.

Each case history will be documented with every available fact and figure relating to production, merchandising, marketing, sales and costs!

Complete and self-contained, this issue will present so powerful and convincing a message that it will become an essential sales tool for every salesman in the industry.

CIRCULATION WILL HIT 25,000—GUARANTEED

To make certain that the issue reaches *top management* in every plant where plastics can find a major market, the regular circulation will be augmented by selective distribution to hand-picked lists of important manufacturing companies throughout the country. As a result, circulation will reach a guaranteed figure of 25,000—or about 25% more than that of a regular issue!

YOU CAN SHARE IN THIS GIANT PROMOTION

Every company in the plastics industry has a stake in the tremendous sales promotional effect which the January issue will create. Your own special advertising message—built, preferably, on the theme of the January number, "Plastics Build Better Products and Better Values"—will enable you to share in the sales-stimulating effect of this uniquely powerful issue.

Start planning your advertisement now. But don't forget the first important step: write, phone or wire to get your space reservation in. Final deadline is November 28. *Modern Plastics, 122 East 42nd Street, New York 17, N. Y.*

Miller
WOOD FLOUR

Formulated to meet the strict requirements of the plastic industry. Miller Wood Flour is an approved uniform product. Available in 4 standard grades, or made up to meet your particular specifications.

Prompt Shipment.
Phone, wire, write us regarding your requirements.

Frank Miller & Sons
2246 West 58th Street, Chicago 36, Illinois

CR-39
Clear Plastic Sheet

Developed by Columbia Chemical Division of the Pittsburgh Plate Glass Co., CR-39 is an unusual thermosetting material with properties which suit it to a multitude of applications.

- Highly abrasion resistant (30-40 times more so than acrylic).
- Extraordinarily resistant to all acids, reagents, organic solvents, salt water, gasoline fumes, etc.
- Excellent impact resistance. High heat distortion point.
- Opaque or transparent colors and clear.
- Half the weight of glass, with equivalent light transmission.
- Can be drawn into moderate compound curves.
- Sheet sizes up to 40" x 60" . . . thicknesses from .040" to .500" . . . tolerances ± 10%.

CR-39 is supplied in cast sheets or fabricated to finished dimensions. Fabricating and engineering instructions are available without charge. Send today for samples suitable for your application.

CAST OPTICS CORP.
115 Jericho Turnpike Mineola, New York
Garden City 7-7411

use of self-curing rubber-based adhesives has also been practical with the thinner laminates because they are flexible enough to stay in place without pressure until cure of the glue is complete. This technique has reduced warpage strains to a point where the usual backing sheet has been eliminated, and costs further reduced. Figure 12 shows a dinette table top fabricated in this fashion.

In the industrial field, the use of flexible polyesters and glass fabric produces a continuous flexible laminate useful for slot liners in electric motors. Such a material is produced by Continental Can Co., Inc., Cambridge, Ohio, and Laminated Plastics Inc. The electrical market has also indicated a place for both glass and paper based polyester laminates where very high frequencies are encountered.

A market for cargo space liners for airplanes has been developed in glass fabric laminates; lower cost mat materials under development should expand this market. For the military, continuous laminates for wing liner materials for aircraft fuel cells continue to be produced.

Two opening markets are for a thin decorative covering for vertical wall surfaces at an applied cost between linoleum and plastic tile, and for Masonite, plywood, and wood waste-resin wallboards surfaced with extremely thin laminates cured directly on the base panels.

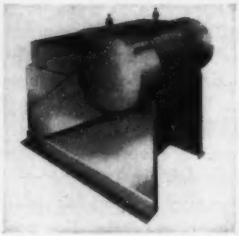
An interesting new development is polyester-glass yard goods which is produced 42 in. wide, 100 yd. to the roll, and in thicknesses ranging from 0.012 to 0.027 in. by Polyplastex United, Inc., Elmhurst, L. I., N. Y. The yard goods can be converted into multiple laminates by simply sheeting the material to the desired size and laminating under low pressure to base panels of various types.

Caution! It takes plenty of capital

In spite of the pleasing appearance of present and future markets for reinforced plastics, a word of caution may be in order for small-capital entrepreneurs who may be thrilled at the prospects. The big volume business will be done on compression presses in well tooled metal molds and will probably be done generally by preform with a very delicate balance of resins, structural fillers, inert resin extenders, and pigments. Custom molding takes time to establish so a lot of working capital is required. Proprietary molding can be a gamble—one man lost $30,000 plus a year's time on one project. Not less than $60,000 basic capital and preferably over $100,000 is needed to go into the business properly and a colossal amount of know-how must be purchased or learned; it isn't nearly all in the literature. The acceptance of reinforced plastics as materials for production by well-established compression molders is also a factor of competition to be carefully considered by anyone thinking of entering the field.

Cumberland Machines for the Plastics Industry

New!



CUMBERLAND ROTARY CHOPPING MACHINE

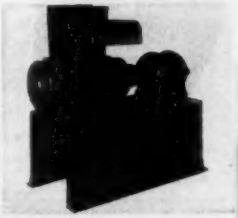
This machine cuts slab material from compounding mills, chops continously extruded rods, sheets of stands and cuts up calendar roll side shear strips. This machine is also used in conjunction with extrusion machines to produce cube or pellet material suitable for a molding compound.

CUMBERLAND SLITTING & MANGLING MACHINE

This machine is useful primarily to manufacturers who compound plastic materials. The machine may be used to reduce material for use as a commercial product without further granulating. Or it may be used to prepare material for subsequent final reduction in a granulating machine.

CUMBERLAND PLASTICS GRANULATING MACHINES

These machines are designed especially for plastics. They perform with high efficiency the special cutting requirements of plastic materials. They are simple in design, rugged in construction and are easy to dismantle and clean. These machines are built in two styles. Nos. 0, ½ and 1½ as at top right (No. ½ is illustrated). Also, large 19' machine, double hung, with retractable knife block for complete accessibility. (illustrated at right below.)



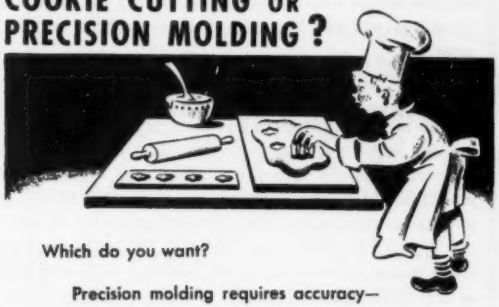
REQUEST CATALOGS

Plastics Granulating Machines .....No. 200
Slitting and Mangling Machine .....No. 300
Rotary Chopping Machine .....No. 400

CUMBERLAND ENGINEERING COMPANY, INC.

Dept. (A), Box 216, Providence, Rhode Island

COOKIE CUTTING OR PRECISION MOLDING?



Which do you want?

Precision molding requires accuracy—experience — engineering — high technical skill — complete "know how" to design your piece, work out your problems, produce your piece to your complete satisfaction.

On the other hand, cookie cutting — well!

PLASTIC MOLDING CORPORATION

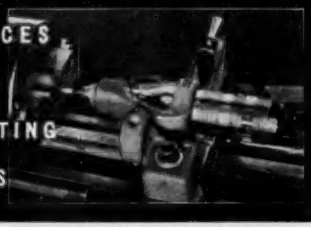
Custom Molders · Precision Molders

Sandy Hook Connecticut

Cold Mold • Hot Compression • Plunger Transfer • Injection

45,000 R.P.M.

INTRODUCES NEW COST-CUTTING METHODS



SPEED WITH PRECISION FOR MORE USES

New all-metal housing . . . new, stronger precision quill . . . new sealed micro-precision bearings that never need lubrication. *The ideal speed, power and precision for tungsten carbide micro-mills.* Use with or without Super COOL-FLEX Attachment or mount in lathe, drill press, milling machine, etc. Grinds, mills, drills, finishes and polishes all materials including the hardest steel. Up to ¼ H.P., 115-volt AC-DC motor is protected by replaceable fusetron. Tools and attachments are available for almost any production set-up.

Write FOR CIRCULAR No. F4

PRECISE PRODUCTS CO.

1348 Clark St. • Racine, Wis.

PRECISE SUPER 40

Plastic Molds

SINCE 1918

INJECTION
•
COMPRESSION
•
TRANSFER
•

It's simply a matter of addition:
MODERN EQUIPMENT
+ SOUND ENGINEERING
+ 31 YEARS PRACTICAL EXPERIENCE
= SUPERIOR MOLDS

Our service includes complete engineering coverage from original product design to ultimate testing of the mold on our 8 or 16 oz. injection machines.

EAGLE TOOL & MACHINE CO.
37-39 FREEMAN ST., NEWARK 5, N. J.
TELEPHONES: MARKET 3-1572-73

For Laminating Materials
Use PHENOPREG

For all jobs requiring laminating materials, reinforcing materials, molded laminated, etc., investigate PHENOPREG.

For decorative laminates, such as table tops, bar tops, wall panels, or similar requirements we recommend our PHENOPREG MB grades which include a complete range of colors and patterns.

For special coating or impregnating jobs we have the finest equipment available.

We solicit your inquiries outlining your problems or specifications.

FABRICON PRODUCTS, Inc.
Plastics Division
1721 Pleasant Avenue • River Rouge 18, Michigan
VInewood 1-8200

Vinyl Spread Coating

(*Continued from page* 85)

backed casting roll is also micrometrically adjustable. Since the web is not subjected to much tension or pressure, and since the coater uses a casting principle to apply the coating, varying caliper of the web does not affect the uniform thickness of coating being applied. The fabric used should be fairly smooth in texture and have a close, tight weave. A reverse roll coater costs from three to five times more than a knife coater but gives greater speed, more accurate thickness, and an excellent surface. It is particularly applicable for high solid content compounds.

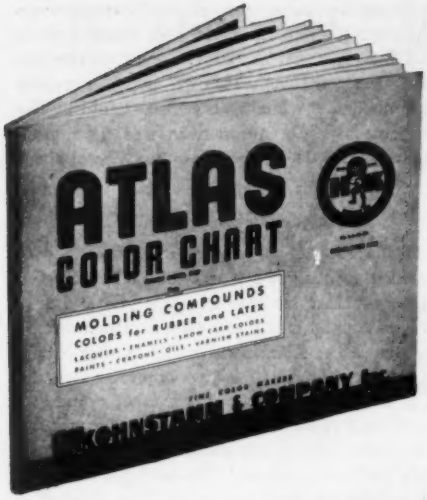
In all of the methods of coating described thus far it is, of course, necessary that the coated fabric be dried or cured, immediately after coating, by running it through some sort of a heated chamber or hood. In most cases the coating head and the curing equipment are set on a horizontal plane, but in the system known as tower coating, all of the equipment —coating head, curing chamber, etc.—is set in vertical position. By this method, either cloth or paper can be coated with a roll coater, reverse roll coater, knife coater, or a dip coating system. Tower coating for years has been the customary method for simultaneously coating both sides of a fabric. The positioning of the applicator system to obtain proper tension on the web and distribution of gunk depends upon the skill and knowledge of the builder and the operator.

Tower coating

One of the differences between horizontal coating set-ups and tower coating is that, in the latter, multiple coatings can be applied in one pass through the machine. Also, multiple set-ups are possible. For example, one firm has a tower coating system whereby it puts four heads in one unit. With this equipment it is possible to run two different rolls of fabric at the same time, on each of which two coatings can be applied, or the machine can be set to coat one roll four different times. All kinds of combinations of from one to four coatings on two rolls can be handled on this contrivance.

Tower coaters are generally operated at a slow speed, but that slowness has certain advantages. Fewer men are needed to operate a slow-speed machine and, if anything goes wrong, there is more time to correct it; that is, the machine does not pile up a big yardage of reject material. Such a machine is not ordinarily used for coating a long run of fabric intended for upholstery or similar uses; but on the other hand, it is excellent for fusing organosols for special applications such as umbrella cloth or other products where impregnation is desirable. Glass mat

COLOR MAKERS SINCE 1851


ATLAS
COLOR CHART
MOLDING COMPOUNDS
COLORS for RUBBER and LATEX
LACQUERS · ENAMELS · SHOW CARD COLORS
PAINTS · CRAYONS · OILS · VARNISH STAINS
FINE COLOR MAKERS
H. KOHNSTAMM & COMPANY Inc.

Color appeal is the greatest possible sales aid for MOLDED PRODUCTS. It depends, naturally, on the wise selection and proper use of suitable coloring media. We can help you select colors that will blend uniformly into the molding compound—stand up under the severe heat and pressure of molding—and finally, lend decorative charm to the end product.

We'll be glad to give our prompt attention to your request for color samples. It is important that you tell us under what specific conditions, and with what molding compounds, you plan to use them.

THE ATLAS LABEL PROTECTS YOU!

FIRST PRODUCERS OF CERTIFIED COLORS

H. KOHNSTAMM & COMPANY Inc.

ESTABLISHED 1851

89 PARK PLACE, NEW YORK 7 · 11-13 E. ILLINOIS ST., CHICAGO 11 · 4735 DISTRICT BLVD., LOS ANGELES 11

ATLANTA · BALTIMORE · BOSTON · CINCINNATI · CLEVELAND · DALLAS · DETROIT · HOUSTON · INDIANAPOLIS · KANSAS CITY, MO. · MINNEAPOLIS · NEW ORLEANS · OMAHA · PHILADELPHIA · PITTSBURGH · ST. LOUIS · SAN FRANCISCO

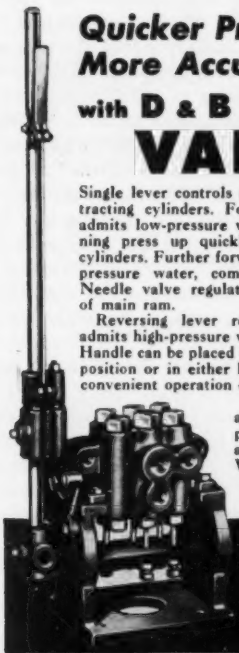
Quicker Press Action— More Accurate Control

with D & B Lever-Operated VALVES

Single lever controls action of both main and retracting cylinders. Forward movement of lever admits low-pressure water to main cylinder running press up quickly and relieving retracting cylinders. Further forward movement admits high-pressure water, completing pressing operation. Needle valve regulates high-pressure movement of main ram.

Reversing lever relieves main cylinder and admits high-pressure water to retracting cylinders. Handle can be placed in either up or down vertical position or in either horizontal position for most convenient operation on either side of press.

Removable monel seats and checks; stainless lift pins. Built for long, dependable, high-pressure service. Write for details.



Dunning & Boschert PRESS CO., INC.

331 W. WATER ST., SYRACUSE 4, N. Y.

Consult Waterbury for Molded Plastics

- Creative Service in Product Development
- Research, Design, Engineering Counsel
- Compression, Transfer, High Speed and Injection Molding
- Over a Century of Fine Tool Work
- Finishing, Assembling, Packaging

Our technical staff will gladly confer with yo

Write for Waterbury Plastics Catalog

WATERBURY COMPANIES, INC.

South Main St. · Waterbury, Conn.

through its...

Plastics Industries Technical Institute

offers the most modern training in Plastics Processing — beginning and advanced.

1 College level degree training in Mechanical Engineering with specialization in Plastics Processing.

2 Resident training, intensive and practical — Plastics Fabrication — Plastics Technician.

3 Home Training, for up-grading plastics industry personnel or as preparation for worthwhile employment in the industry.

West Coast University invites the cooperation of the plastics industry in the continuing development and improvement of practical programs of plastics education and training.

INDUSTRY REQUESTS FOR TRAINED PERSONNEL GIVEN PROMPT ATTENTION

Plastics Industries Technical Institute
department of WEST COAST UNIVERSITY
1601 South Western Avenue, Los Angeles 6, California

Have You DEGATING Problems?

We have made many kinds of DEGATORS

The one shown is air operated. As a safety measure both hands must be used to actuate the air cylinder.

WE also have facilities available for Hobbing — Hob Making — Keller Work — Pantographing — Duplicating — Design — Engineering.

Also Stan-Casts (Stainless Steel Castings)
Beryllium Pressure Castings

Write for further information.

STANDARD TOOL CO.
83 WATER STREET, LEOMINSTER, MASS.

Outfitters to Plastics Mfrs. Since 1911

OMNI PRODUCTS CORP., Export Distributors, New York, N. Y.

impregnation is another operation that has been successfully performed on a tower coater, but perhaps the biggest volume of work on these machines has been impregnation of fabric with thermosetting resins for the electrical industry. Tower coaters are sometimes two or three stories high, depending upon the space needed for curing the coated fabric. The multiple installation mentioned in this paragraph, built at a cost of $30,000, occupies a horizontal space of only 12 by 6 feet.

Edgewise coating

One of the recent developments is an edgewise coater which is designed to do the same thing as a tower coater without the necessity of building a vertical curing chamber. The rolls are placed on end or vertically rather than horizontally. Either a one-side or two-side coating may be applied since the coating is pumped to the top of either or both sides of the web and permitted to flow down, forming a nip at the rolls. The fabric passes through the machine in a vertical position, being held on the upper edge by automatic clips during its trip through a heating and drying chamber until it reaches the take-off roll. It operates at much greater speeds than the 1 to 3 ft. per minute of the more standard tower coaters and is especially applicable for shade cloth, insulating material, and the like.

A new and as yet little-used coater in the vinyl industry is the Waldron Diatron Coater,[1] which exploits a quite different principle than all other coaters. Instead of a rubber blanket, as shown in C of Sketch 2, the machine is built so that the rubber roll is superseded by a rubber diaphragm controlled by air pressure. The knife is in a floating position, but the diaphragm is manipulated by air to obtain just the right thickness of coating between the web and the blade. The flexibility and resiliency of the pneumatic diaphragm brings the surface of the material to be coated level at the line of application of the coating, which is different than any other method of supporting the web. It differs from all other knife type coaters, says the manufacturer, in that the regulating pressure is provided by the diaphragm from the bottom rather than by the knife from the top. One great advantage is that the knife can be cleaned by wiping and the pressure easily reset to establish the same thickness of coating which has been running. By the old method, when a knife is removed for cleaning, many yards of goods may have to be run before the same thickness can be obtained again.

The diaphragm type coater is especially useful for samples, short runs, and for different colors or types of coatings. This type of coater is applicable for coating canvas, sateen, twill, etc., but could not be used for open type weaves such as cheesecloth

[1]Patent applied for.

"PLASTICS ARE *RIGHT* IF THEY'RE *MOLDED* BY *Northern*"

Right in design, correct in engineering principle, and the one right compound scientifically selected to best fit the specifications of each molding job — that's the meaning of, "*Plastics* are Right if they're Molded by *Northern*".

And a goodly cross section of industry has learned this is exactly what they get when they select *Northern* to do their custom molding. Because *Northern* molders are craftsmen who have grown up with the plastic industry, they are completely familiar with *all* compounds, know *when* to use them, and *how* best to mold *each* one.

For these reasons General Mills selected *Northern* to mold the plastic handles of this Pressure *Quick* Saucepan. These *Northern* handles of a phenolic plastic can't corrode, can't rust, protect hands from heat. Put your plastic problems up to *Northern* — you'll be 100% satisfied.

Northern **INDUSTRIAL CHEMICAL CO.**

40 Years of Plastic Molding Experience

11 ELKINS STREET, SO. BOSTON, MASS. SOuth 8-4240

BRANCH OFFICES

441 Lexington Ave. New York, N. Y. Tel. VAnderbilt 6-1684

627 Powers Bldg. Rochester 4, N. Y. Tel. BAker 8701

P.O. Box 5404 Phila 29, Pa. Tel. Victor 4-8679

NRM

Plastics Extrusion Equipment

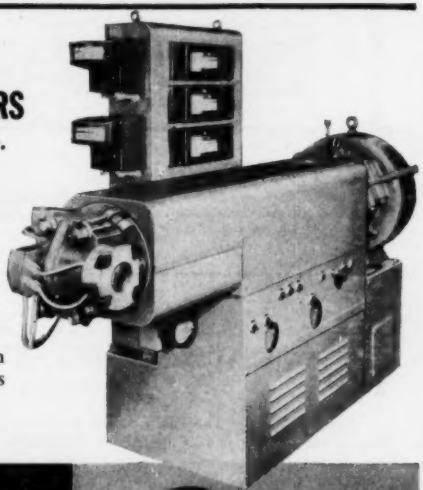
ELECTRIC • OIL • STEAM HEATED EXTRUDERS

Sizes—1" to 10" • Capacities—10 lbs. to 1000 lbs. per hr.

COMPLETE INSTALLATIONS FOR WIRE AND CABLE COVERING—SHEETING—PELLETIZING

A full line of

CONVEYORS, CHOPPERS, GRANULATORS, DRYING OVENS



Designed and Built by Pioneer Engineers with more than 70 years experience in the development of thermoplastics processing machinery.

Make use of our experimental facilities.

NATIONAL RUBBER MACHINERY CO.

General Offices: AKRON 8, OHIO

Plants in Akron, Ohio • Columbiana, Ohio • Clifton, N. J.

Plastics MACHINERY DIVISION

EXPORT DISTRIBUTORS: OMNI PRODUCTS CORPORATION, 460 FOURTH AVE., NEW YORK 16, N Y

Processing vinyl stocks? It will pay you to set up a trial run on these *new Ferro Stabilizers!* Are your production requirements for minimum opacity? Need flexibility? Heat and light stability or compatibility? You'll find *Ferro Stabilizers* are compounded to provide the type of processing characteristics production departments rely on for dependable, economical operation. Check your requirements and order a trial quantity of each of the four *new Ferro Stabilizers* today. Each has been thoroughly tested, production-proved, and will meet your most rigid specifications.

BARIUM 2-ETHYL HEXOATE #100
Mobile, light-colored liquid. Bland odor. Imparts very low opacity with excellent heat stabilization. Pronounced synergistic effect when used with Ferro Cadmium Stabilizers.

BASIC LEAD SALT OF 2-ETHYL HEXOATE #301
White, powdery solid. Good, high-temperature protection, especially when used in small quantities with #361. Minimum lubricity effects, allowing freedom of formulation.

LEAD ORGANOSILICATE #361
White, powdery solid—rapid dispersion and incorporation. Minimum opacity with excellent heat stabilization.

SODIUM ORGANOPHOSPHATE #541
Readily liquefied, translucent solid. Good heat and excellent light stabilization. Outstanding compatibility with lead compounds.

The Ferro Chemical Corporation will gladly help any plastics manufacturers to utilize *Ferro Stabilizers* to the best advantage in their formulations. Write us on your letterhead for prices, samples and any additional detailed information you might require, we'll answer promptly.

FERRO CHEMICAL CORPORATION
Bedford, Ohio
STABILIZERS • DRIERS
METALLIC SOAPS • COBALT COMPOUNDS
A SUBSIDIARY OF FERRO ENAMEL CORPORATION

FERRO

where the coating compound would run through and stick to the diaphragm. At present it is being used largely in laboratories for producing samples and short runs, but can be made any size desired.

Nearly all fabric is calendered to smooth out the fibers and surface before it is run through a coating machine. The fabric is also calendered between coats in order to improve the surface. This type calendering is done on a simple two-roll calender unit with one hot and one cold roll. It is a glorified ironing process. Such a calender, selling for a few thousand dollars, should not be confused with the big calenders used for processing film and sheeting. The fabric is also frequently run through the coating machine to receive a thin prime coat of organosol, plastisol, or vinyl latex before it receives the actual coating for a specific end use.

The amount of fabric that can be coated with vinyl in this country with present facilities is anyone's guess. There is no accurate estimate available since many machines built in the owners' shops are not on the record, and many machines working on other materials could be easily converted to vinyl. One salesman in the industry offered to guess that at least 250 coating heads were now coating vinyl on fabric or paper. In 1948, about 35,000,000 lb. of vinyl compound were consumed in fabric coating, and it has been estimated that from 20 to 25% of this amount was spread coated, the remainder being applied by calendering. The speed of production is a completely unpredictable figure. Several coats are nearly always employed and, in each case, or for each successive application, the speed might vary. The number of coats generally runs from three to five. Six ounces of organosol to a square yard of fabric, which would be equivalent to a 6 mil thickness, is a very heavy coat for one pass. One operator says he would never go over four. Occasionally a very heavy layer, such as 20 mils, is laid down, but it would probably require more time than three 6⅔-mil layers, depending upon the heating equipment available in the ovens.

Acknowledgments

The following companies have contributed the information contained in the above article: John Waldron Corp., New Brunswick, N. J.; Meadows Machine Works, Inc., South Kearney, N. J.; Standard Insulation Co., East Rutherford, N. J.; Landers Corp., Toledo, Ohio; Gordon-Lacy Chemical Products Co., Inc., Maspeth, N. Y.; I. B. Kleinert Rubber Co., New York, N. Y.; Bakelite Corp., New York, N. Y.; B. F. Goodrich Chemical Co., Cleveland, Ohio.

NEXT MONTH: *The impact of organisols and plastisols on the vinyl coatings industry, plus a discussion of the equipment required by coaters as auxiliaries to their coating heads.*

• MANUFACTURERS' LITERATURE •

To obtain any of the booklets or catalogs listed below, simply circle the corresponding number on the post card, fill in the information requested, and mail.

RESIN GLUE
Full color, 25-page booklet describes the properties and applications of Plaskon resin glues. Plaskon Div., Libbey-Owens-Ford Glass Co. (10-50)

LABELING MACHINE
Fully automatic equipment for applying labels with plastic-to-plastic bond. New Jersey Machine Corp. (10-51)

INJECTION MOLDING
An 8-page booklet that tells the complete story of Reed-Prentice injection molding machines and mold service. Reed-Prentice Corp. (10-52)

MODERN HYDRAULIC PRESSES
A photographic record of accomplishment in the development of hydraulic presses and hydraulic press controls. A tabulation gives pressure on rams of given diameters for given line pressures. 20 pages. The French Oil Mill Machinery Co. (10-53)

KNOBS AND HANDLES
Brochure pictures the Kurz-Kasch line of utensil knobs and handles, with all dimensions. Kurz-Kasch, Inc. (10-54)

INJECTION PRESS
Illustrated bulletin describes the moderately priced Van Dorn Model H-200 1 oz. production injection press. Cutaway view shows essential features. Complete specifications are given. The Van Dorn Iron Works Co. (10-55)

ELECTRIC HEATING UNITS
Illustrated 6-page booklet describes electric heating units designed and manufactured for a wide variety of industrial purposes. Glenn Electric Heater Co. (10-56)

STOCK ITEMS
Caps, radio housings, electrical parts, and hundreds of other pieces are shown, with descriptions and specifications. Loose-leaf catalog. Waterbury Co., Inc. (10-57)

HYDRAULIC EQUIPMENT
Molding, laboratory, and small production presses are described, together with accumulators, pumps, and other accessories used in plastics molding. Illustrated descriptions and specifications. 12 pages. Elmes Engineering Div., American Steel Foundries. (10-58)

VINYLITE PLASTICS RIGID SHEETS
Technical data on machining, forming, cementing, and finishing and finishes are presented in this 28-page pamphlet. Bakelite Corp. (10-59)

CARBON BLACKS FOR RUBBER
Tests of Cabot blacks in natural rubber, in GR-S, and in neoprene are recorded in this 59-page brochure. Godfrey L. Cabot, Inc. (10-60)

HYCAR AMERICAN RUBBER
An 8-page illustrated booklet introducing the various types of Hycar American rubber. Properties of Hycar and its vulcanizates are described, and typical end-uses are presented. B. F. Goodrich Chemical Co. (10-61)

STYRENE MONOMER
Properties of the monomer are given in this 24-page booklet. Surface coating applications are suggested. Technical data and formulas are included. Monsanto Chemical Co. (10-62)

VINYL COATINGS
Advantages, recommended applications, properties, and methods of applying Acryvin Acraclad vinyl coatings. Acryvin Corp. of America. (10-63)

ROYALITE SYNTHETIC COMPOSITION
In eight pages, this booklet gives the history, general specifications, advantages, and uses of Royalite, a synthetic material combining the characteristics of both synthetic rubber and plastics. U. S. Rubber Co. (10-64)

ION EXCHANGE
Special ion exchange issue of *The Resinous Reporter* includes the history of development, description of the process, ion exchange resins available, applications, glossary, and bibliography. Rohm & Haas Co. (10-65)

TENITE MOLDING MATERIAL
A 32-page brochure with full-color illustrations covering the properties, uses, and molding and extrusion of Tenite I and II. Tennessee Eastman Corp. (10-66)

SEMI-AUTOMATIC MOLDING PRESSES
Construction features, controls, and optional equipment of Watson-Stillman semi-automatic compression molding presses are presented in an 8-page leaflet. Watson-Stillman Co. (10-67)

MOLDING PROBLEMS
Technical bulletin giving suggestions for solution of molding problems encountered when working with polystyrene, cellulose acetate, and ethyl cellulose. Koppers Co., Inc. (10-68)

TRANSPARENT FILM FOR PACKAGING
Illustrated 8-page leaflet gives uses, film types, and physical and mechanical data on Lumarith cellulose acetate film. Celanese Corp. of America. (10-69)

HYDRAULIC VALVES
Tabulations of dimensions and construction of high pressure hydraulic valves which are useful to the plastics industry. 109 loose-leaf pages. R. D. Wood Co. (10-70)

BANBURY MIXERS
Applications, advantages, performance records, design, installation, sizes, capacities, etc., on Banbury mixers are included in this 29-page illustrated brochure. Farrel-Birmingham Co., Inc. (10-71)

PREHEATING EQUIPMENT
A comprehensive analysis of various ovens, infra-red units, and other preheating equipment is contained in a folder. Miskella Infra-Red Co. (10-72)

FORMICA IDEAS
Full color folder illustrating a variety of designs for a Vanitory (combination lavatory-vanity unit for homes); together with suggested construction details. An explanation is given of the construction of Formica decorative plastic laminates. Other uses are also listed. The Formica Co. (10-73)

READERS SERVICE DEPARTMENT
MODERN PLASTICS

10-50	10-51	10-52	10-53	10-54	10-55	10-56	10-57	10-58	10-59	10-60	10-61
10-62	10-63	10-64	10-65	10-66	10-67	10-68	10-69	10-70	10-71	10-72	10-73
10-74	10-75	10-76	10-77	10-78	10-79	10-80	10-81	10-82	10-83	10-84	10-85
10-86	10-87	10-88	10-89	10-90	10-91	10-92	10-93	10-94	10-95	10-96	10-97

NAME ..... POSITION .....

COMPANY .....

STREET ..... CITY ..... STATE .....

• MANUFACTURERS' LITERATURE •

To obtain any of the booklets or catalogs listed below, simply circle the corresponding number on the post card, fill in the information requested, and mail.

LAMINAC RESINS
Full color booklet explaining what Laminac resins are, how they are used, types available, points of significance to engineers and industrial designers, etc. 8 pages. American Cyanamid Co. **(10-74)**

CONTROLLABLE CAPACITY PUMPS
Applications, standard sizes and ratings, and data on power costs are included in this 8-page booklet covering pumps produced by The Aldrich Pump Co. **(10-75)**

PRESSURE PROCESSING OF SYNTHETIC RESINS
A general discussion of thermosetting resins, compression molding, transfer molding, thermo-plastic resins, and injection molding. The Hydraulic Press Mfg. Co. **(10-76)**

DIAMOND COMPOUND
Bulletin lists various grades of diamond abrasive compounds, together with their color identification. Price information is presented on Dymo diamond compounds. Industrial Products Div., Elgin National Watch Co. **(10-77)**

STOCK ITEMS
Plastic plugs and caps, screws, boxes, etc. Individual data sheets are included. S. S. White Dental Mfg. Co. **(10-78)**

EXTRUDED PLASTICS
Descriptions, applications, and technical data on all types of extruded Fibron elastomeric vinyl, including tubes and tapes. Two frequently used equivalent charts are also included. Irvington Varnish and Insulator Co. **(10-79)**

METAL DETECTOR
Electronic device for inspecting food, paper, explosives, etc. Prevents machinery damage and loss of production time. 8 pages. Allis-Chalmers Mfg. Co. **(10-80)**

PELLET-DICER
Illustrated booklet describes an improved dicer for thermoplastic materials, which features variable extrusion speed, feed control, and lowered fuel consumption. Ball and Jewell, Inc. **(10-81)**

PREFORMING PRESSES
Preforming, electronic preheating, and injection molding of thermosetting materials in one controlled cycle on presses with 8 and 16 oz. capacities. 6 pages. Rockford Machine Tool Co. **(10-82)**

PLASTICS AND METALS
Individual or combination uses of plastics and metals to produce quality products are described in this 16-page brochure. Line of items is shown in four colors. Electric Auto-Lite Co. **(10-83)**

BERYLLIUM COPPER CASTING
Catalog gives technical information on casting under pressure for fabrication of cores and cavities for plastic and rubber molds. Manco Products Co. **(10-84)**

INDUSTRIAL OVENS
Gas fired units for shop, factory, or foundry, in multiple deck and swing door types. 4 pages. G. S. Blodgett Co. **(10-85)**

POLYVINYL MATERIALS CHART
Lists of Geon materials, the usual methods of compounding and processing them, and their typical end uses. 2 pages. B. F. Goodrich Chemical Co. **(10-86)**

PLASTISOLS AND ORGANOSOLS
Bulletin deals with molding and dip coating with these vinyl dispersions. The Stanley Chemical Co. **(10-87)**

INDUSTRIAL PLASTICS
General catalog presents properties, forms, applications, and technical data on laminated thermosetting plastics. Synthane Corp. **(10-88)**

VINYL SHEET
Sample book contains one sample of each of the different vinyl sheet materials manufactured by Respro, Inc. Thicknesses and colors available are listed. Respro, Inc. **(10-89)**

POLYETHYLENE FOR PACKAGING
Uses, properties, and list of applications for Plaxpak extruded polyethylene sheeting and lay-flat tubing. Plax Corp. **(10-90)**

A CAREER IN PLASTICS
Full color 22-page booklet reviews the field of plastics and gives the scope of courses offered by West Coat University. Plastics Industries Technical Institute. **(10-91)**

MOLDING METHODS AND MATERIALS
How plastics are molded, importance of good design, properties of materials, definitions of physical properties. Parts available from stock molds are listed and illustrated. 62 pages. American Insulator Corp. **(10-92)**

STEAM PLATEN PRESSES
Illustrated 12-page brochure shows various presses produced by The Baldwin Locomotive Works and gives data as to capacity, daylight opening, platen area, stroke, and pump H.P. The Baldwin Locomotive Works. **(10-93)**

SYNTHETIC RESINS
Brief descriptions of properties and uses of various synthetic resins, such as Abitol, Lewisol, Pentalyn, Petex, etc. Hercules Powder Co. **(10-94)**

COMMERCIAL GLASSWARE
Information concerning the manufacture and design of commercial glassware, such as: melting, blowing and pressing glass; design suggestions; annealing and tempering; trimming blownware; sealing components together; etc. Illustrated 22-page brochure. Corning Glass Works. **(10-95)**

PLASTICIZERS AND EXTENDERS
A 26-page brochure gives typical analysis of four grades of Dutrex hydrocarbons; solubilities of Dutrex; and applications in lacquers, varnishes, adhesives and binders. Shell Oil Co., Inc. **(10-96)**

STEAM, AIR AND WATER EQUIPMENT
Rotary pressure joints, direct operated solenoid valves, instant steam water heaters, and separators and aftercoolers are described in this 52-page catalog. The Johnson Corp. **(10-97)**

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 2456 (Sec. 510, P. L. & R.), New York, N. Y.

MODERN PLASTICS
122 East 42nd Street
NEW YORK 17, N. Y.

Agricultural Residue

(*Continued from page* 112)

Alternate soaking and drying tests.—Strip shear specimens were subjected to alternate soaking in water at room temperature for ½ hr. and drying for ½ hr. at 105° C. for 5, 10, 15, and 20 cycles with dry shear strength tests made after each 5-cycle period. These tests were made to obtain information on the relationship of strength and wood failure under severe conditions of treatment.

The results of these tests, composition of glues, amount of glue, dry resin solids, and agricultural residue flour spread per 1000 sq. ft. of single glue line, and the percent saving in resin obtained by agricultural residue flours are shown in Table I.

Discussion of results

All of the 13 agricultural residue extended glues showed excellent strength and, with one exception, showed dry-shear strengths somewhat higher than that for the unextended resin glue. The results of the 3-hr. boiling water wet-shear tests showed that the strengths of the extended glues were slightly lower than that for the unextended glue but well above specification requirements.

The slightly lower wet-shear strengths shown by the agricultural residue extended glues is believed to be the result of type of spread produced by the corrugated roll spreader rather than the result of the inherent chemical character of the glues. This is indicated by the fact that when a uniformly thin film was spread on all four glued surfaces by means of a clothes wringer, 10 out of 13 agricultural residue glues showed wet-shear strength equal to or greater than that of the unextended resin glue.

Residue characteristics.—It will be noted from the tabulated data that the resin solution concentrations used in the agricultural residue extended glues varied from 25 to 35% of resin and the proportion of resin solution to flour varied from 4 to 8.5 parts of resin solution to 1 of flour. These different conditions were necessary because of the differences in bulk density of the residues and their water-holding capacity. The dense residue flours such as English walnut, black walnut, pecan, and hard almond shell tended to settle out and produce spotty films if the concentration of the resin solution was reduced below 35% of resin. The residue flours of a more fluffy nature such as those of wheat straw, cottonseed hull, corncob, and flax shive could be dispersed to produce satisfactory spreading properties in resin solutions of lower concentration. A wide variation was found in the amount of residue required to increase the consistency of the resin solution to spreading consistency. For example, the amount of flour required to increase the consistency of a 30% resin

for Extrusion

a new series of

Non-Toxic

ELASTOMERIC

Vinyl Compounds

These new formulations have been recently developed for applications where the finished extrusions will contact liquid or solid food products. They exhibit excellent stability over a broad temperature range. Non-toxic varieties include —

- TRANSPARENT CLEARS
- NON-BLEEDING OPAQUES
- TRANSPARENT COLORS

TRANSPARENT GRADES HAVE EXCEPTIONAL CLARITY

for use in

refrigerators — bottling machinery

food machinery — beer tubing

food casings

also for calendering and injection molding

COLORS MATCHED TO SAMPLES

Special Formulations Compounded for Specific Applications.

• WALJOHN PLASTICS, INC. •

437 88th Street — Brooklyn 9, N. Y.

VERY LOW COST

BLODGETT OVENS FOR PLASTIC OPERATIONS

FACILITATE DEPARTMENTALIZING
LOAD EASILY
CONTROL CLOSELY
COST LITTLE
ARE GAS HEATED

Blodgett Sectional or Multiple-Deck, Gas-fired Ovens are producing excellent results in hundreds of plants — curing, heat molding, drying, preform heating, paint drying, etc. Send now for the colorful folder "Blodgett Ovens and Plastics Products".

for Precise PLASTIC OPERATIONS

BLODGETT INDUSTRIAL OVENS

THE G. S. BLODGETT CO., INC., 18 LAKE ST., BURLINGTON, VT.

NYLON . . MOLDED TO YOUR REQUIREMENTS

VALVE SEAT DISCS
in FM-10001 (Rigid) Nylon

VALVE WASHERS
in FE-1044 (Semi-Rigid) Nylon

CONTRACT NYLON MOLDING
We have the set-up and the experience to give you the best in nylon parts molding in small or large quantities.

SEND FOR QUOTATIONS ON SPECIFIC REQUIREMENTS

NYLON RODS
FOR IMMEDIATE DELIVERY
in 1/16", 3/16" and 5/16" diameters and 8¾" lengths in FM-10001 Nylon. Quantity prices on request.

S.S.WHITE PLASTICS DIVISION
THE S. S. WHITE DENTAL MFG. CO.
DEPT. M 10 EAST 40th ST., NEW YORK 16, N. Y.
FLEXIBLE SHAFTS AND ACCESSORIES
MOLDED PLASTICS PRODUCTS—MOLDED RESISTORS

solution to spreading consistency was less than half as much for peanut shell as for rice-hull flour.

When the laboratory prepared liquid resin was diluted to a concentration of 45% its consistency was reduced to the minimum which could be used without dripping from the rolls during the spreading operation. When this resin solution was spread in a film as thin as could be uniformly spread, 10 lb. of resin solids was used per 1000 sq. ft. of single glue line. By using agricultural residue extenders to increase the consistency of the resin solutions, it was possible to produce glues with satisfactory spreading properties from resin solutions with lower concentrations of resin. Hence, glues were prepared with the lowest resin concentration and the maximum amount of agricultural residue flour that would produce satisfactory spreading properties and at the same time give strength properties comparable to those of the unextended glue. The percent saving in resin was calculated on the basis of the difference between the 10 lb. of resin per 1000 sq. ft. of single glue line that was required by the unextended resin glue and the amount of resin required by the agricultural residue extended glues. The results of these experiments showed that a saving of 21 to 48% of resin was accomplished by the use of the agricultural residue extenders. The figures for the percent savings in resin shown in the accompanying table cannot be considered as representing absolutely quantitative values for the different residues, because the number of variables involved in such a determination are so great that further work could well alter the relative values for the various residues.

Function of agricultural residue flours.—As a result of the attempt to determine the minimum amount of resin required to produce optimum strength with aircraft-grade yellow birch, it became evident that 5 or 6 lb. of resin solids were required per 1000 sq. ft. of single glue line regardless of the agricultural residue used. The function of the agricultural residue extender appeared to be that of a thickening agent, which permitted the use of resin solutions of 30% of resin instead of the higher concentration of 45% of resin in the case of the unextended resin glue. Hence, panels were prepared with an unextended resin glue made from a sample of resin that had been in storage at 40° F. for several months. The consistency of this resin had increased to the point where a solution of 30% of resin solids was sufficiently viscous for satisfactory spreading. The results of this experiment showed that good strength properties were obtained with 6.5 lb. of resin solids instead of the 10 lb. used in the case of the resin as originally prepared.

Therefore, the use of agricultural residue flours as extenders permits the use of moderately polymerized resins with a longer storage life. By the

TOUGHEST LOW-PRESSURE CASTING IN THE WORLD

even a smashing blow can't hurt PARAPLEX*

This isn't a golf ball whizzing at you; it's a casting of PARAPLEX resins, P-43 and P-13. The ball is so tough that it took this punishing test blow without damage. (In fact, it actually dented the club.) Yet it was cast in an ordinary laboratory flask—without reinforcement —without pressure!

From PARAPLEX P-43 comes extreme hardness, from PARAPLEX P-13—permanent flexibility. From a one-to-one blend of the two resins comes an extremely tough casting that can be produced in many colors. Other ratios of the PARAPLEXES afford a wide range of toughness and flexibility that can mean more business for you.

How will you use the PARAPLEX blend? Perhaps in potting electrical inserts, or in sheets or rods, or in bowling balls. Perhaps in laminates based on glass, fabric or paper. Our booklet, "PARAPLEX for Laminating, Molding, and Casting Applications", suggests many ways in which these resins can speed processing, improve products, and reduce costs. Write for it today.

Write to Department MP-3 for technical literature describing fully the advantages and uses of the PARAPLEX "P" Series Resins.

*PARAPLEX is a trade-mark, Reg. U. S. Pat. Off. and in principal foreign countries.

CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

THE RESINOUS PRODUCTS DIVISION

Washington Square Philadelphia 5, Pa.

The Resinous Products Division was formerly The Resinous Products & Chemical Company

ORGANIC PEROXIDES

KETONE PEROXIDES

LUPERSOL® DDM (60% Methyl Ethyl Ketone Peroxide in Dimethyl Phthalate)

LUPERSOL® FDM (80% Methyl Isobutyl Ketone Peroxide in Dimethyl Phthalate)

METHYL AMYL KETONE PEROXIDE

CYCLOHEXANONE PEROXIDE, TECHNICAL

ALSO AVAILABLE

ALDEHYDE PEROXIDES DIACYL PEROXIDES

ALKYL HYDROPEROXIDES AND DERIVATIVES

SPECIAL ORGANIC PEROXIDES

®REGISTERED TRADEMARK

LUCIDOL DIVISION

NOVADEL-AGENE CORPORATION

BUFFALO 5, NEW YORK

This *Phenolite* Insulator* licked our production headache in a hurry.

Required:
A material with very high insulation resistance under all atmospheric conditions—with good mechanical strength and ready machinability. Phenolite, laminated plastic, with all these qualities, plus—was the perfect answer.

In your development of efficient, economical products, it pays to investigate

About one-half the weight of aluminum, possesses an unusual combination of properties—a good electrical insulator, great mechanical strength, high resistance to moisture; ready machinability. Sheets, Rods, Tubes, Special Shapes.

Write for engineering help

PHENOLITE Laminated PLASTIC

Since 1873

NATIONAL VULCANIZED FIBRE CO.

WILMINGTON, DELAWARE Offices in Principal Cities

thickening action of the residues, the consistency of resin solutions of relatively low resin concentration can be increased to give satisfactory spreading properties, which results in 21 to 48% resin saving.

Wood failure and alternate soaking and drying tests.—The question of the importance of wood failure in plywood specifications is a debatable one among research workers. Some prefer comparatively low strength and high wood failure to high strength and low wood failure on the assumption that glues that show high wood failure age better. Some of the highest strength specimens found, during this study of plywood glues, showed 0% wood failure. However, some specifications for plywood glues demand a minimum of not less than 10 and an average of not less than 30% wood failure regardless of how high the strength.

Alternate soaking and drying experiments were made to determine whether or not this severe treatment would show that high strength was maintained better by specimens with high wood failure. The results of the tests showed no consistent relationship between strength and wood failure. Some of the highest strength specimens showed practically 0% wood failure after 20 cycles of alternate soaking in water at room temperature for ½ hr. followed by drying at 105° C. for ½ hr., although all glues showed originally an average of better than 30% wood failure. Hence, on the basis of these tests, high percentage of wood failure shows that the wood is weaker than the glue, and 0% wood failure shows that the wood is stronger than the glue. No evidence was found that indicated that percent wood failure gave any information in regard to the properties of the glue other than the relative strength of the wood and glue.

No consistent decline in strength was found as a result of the soaking and drying treatment. Strip shear tests were made on 25 specimens from 5 different panels after each 5-cycle period, and although the strength values after each 5-cycle period varied considerably, the strength values at the end of the 20 cycles were practically equal to or greater than the original strength, although the wood showed marked surface checking.

Particle size of flour.—The particle size of flours used as extenders in plywood glues usually pass a No. 200 U. S. Standard screen. Experiments on the use of flours as coarse as 40 mesh showed equally good or better strength than flours of 200 mesh, but there was a tendency, in the case of the coarser flours, for the glue to striate on the spreader into troughs and crests of varying concentrations of flour. Flours passing a No. 60 or finer U. S. Standard screen produced satisfactory results.

Commercial resins.—Three commercial resins, which consisted of a liquid and a powdered phenol-formaldehyde resin and a liquid resorcinol resin,

If it's available, we have it!

IN *Plastics* . . .

Sheet, Rod Tube

for Industrial, Automotive, Commercial Uses

WE are recognized the top suppliers in the field

Immediate delivery on:

- Plexiglas
- Lucite
- Acetate
- Polyethylene
- Vinylite
- Fibre
- Phenolics
- Polystyrene

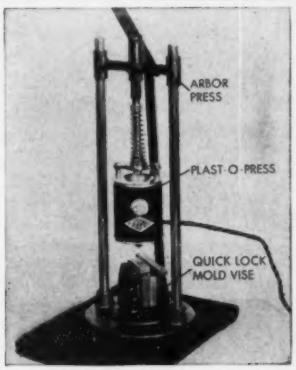
Distributors of PLAX Products

Cadillac Plastic Co.

One of America's Largest Suppliers

651 WEST BALTIMORE • DETROIT 2, MICHIGAN

PERFECT PLAST-O-PRESS



. . . for short runs, tests, experimental and laboratory work — used in leading industries

¼ oz. capacity hand operated plastic injection molding press—$39.50

Chucks into any drill press or order specially designed arbor press—$12.50

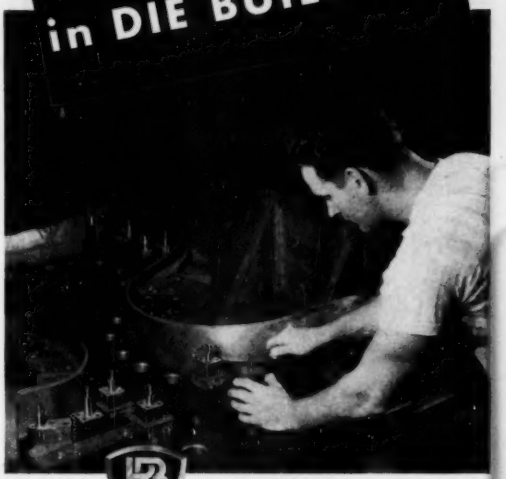
Uses any thermoplastic molding material moldable between 250° and 500° F. Operates on 110—125 volts AC-DC.

Low cost custom molds furnished from any pattern. Molding materials supplied. Low cost experimental molds in stock. Ask for folder M.

Plastics Development Corp.

225 Lafayette Street New York 12, N. Y.

Save TIME and MONEY in DIE BUILDING



with RB Interchangeable

PUNCHES and DIES

RB punches and dies cut die-making costs because they permit use of standardized RB retainers which are quickly and accurately mounted. Completely interchangeable, RB punches, dies and their retainers eliminate large inventories and, unlike most parts used in die construction, have a salvage value.

Quickly and easily installed, yet securely locked both vertically and radially, RB punches and dies reduce press "down time" too, because they enable operators to make quick changes.

RB standard punches and dies are stocked for immediate delivery. Punches and dies of special sizes, shapes and materials are made promptly to your specifications.

GET THE

WHOLE STORY

In This FREE Catalog

A 48 page book containing full information on Allied's "one stop service." Write for your copy.

ALLIED PRODUCTS CORPORATION

Department 36 • 12627 Burt Road • Detroit 23, Michigan

for LOW TEMPERATURE Flexibility

HARFLEX PLASTICIZERS

Trade Mark

DIBUTYL, DICAPRYL, DIBENZYL, DIHEXYL & BUTYL BENZYL SEBACATES & DICAPRYL ADIPATE

OUTSTANDING FOR
LOW VISCOSITY
LOW HEAT LOSS
HIGH EFFICIENCY

MAINTENANCE of FLEXIBILITY over WIDE TEMPERATURE RANGES

Write us for bulletin and further information

HARDESTY CHEMICAL COMPANY, INC.

HARCHEM

41 EAST 42nd ST.
NEW YORK 17, N. Y.

Good Plastics are better than ALIBIS...

When you provide Cambridge Mold Pyrometers for your press operators, there need be no alibis for rejects caused by incorrect molding temperatures. Soft centers, off-colors, warpage and low tensile strength are usually traceable to this cause. With this instrument, it is both quick and easy to determine accurately the surface temperature of each cavity in the mold. The Cambridge is an accurate, rugged, quick-acting instrument that takes the guessing out of molding plastics.

Combination and single purpose instruments

Write for bulletin 194SMP.

Cambridge Instrument Co.

3711 Grand Central Terminal, New York 17, N.Y.

CAMBRIDGE

MOLD • NEEDLE • ROLL

PYROMETERS

Bulletin 194—S gives details of these instruments. They help save money and make better plastics.

were satisfactorily extended with agricultural residue flours. Savings of 24 to 59% of resin solids were obtained by the use of the residue flours, with strip shear strength equal to or greater than that of the original unextended resin glues. The conditions for saving resin in the case of the commercial resins were the same as were found for the laboratory prepared resin; i.e., greatest saving in resin was obtained if the consistency of the unextended resin glue was low for a given concentration of resin solids.

Summary and conclusions

Thirteen agricultural residue flours have been evaluated as extender in plywood glues prepared with a laboratory prepared liquid phenol-formaldehyde resin and found to permit savings in resin of 21 to 48 percent.

Three commercial resins were extended with agricultural residue flours with a saving in resin as high as 59% over that of the unextended resin glue.

Greatest saving in resin was obtained by the use of agricultural residue flours with resins that produced glues of low consistency for a given amount of resin solids.

Glued specimens alternately soaked in water and dried at 105° C. for ½ hr. periods up to 20 cycles over a period of four days retained strip shear strengths equal to or better than those of the original specimens before soaking, although the wood showed marked surface checking.

The evidence obtained from these experiments indicates that the percentage of wood failure in plywood tests furnishes no information in regard to the properties of a glue other than the relative strengths of the glue and the wood.

Bearing Material

(*Continued from page* 116)

A nylon shaft in a nylon sleeve was operated at 100 ft./min. at 40 p.s.i., with an oil temperature of 150° F. Wear was excessive in 2 hr., with some melting of the nylon. The assembly was run for 30 additional hours without seizure, but the fit was sloppy and both surfaces were scored.

In general, excessive loading, inadequate lubrication, or poor mounting lead to the same sort of failure. The nylon heats up, expands, and may thereby seize the rotating shaft more tightly, accelerating the heating. Where local heating may bring nylon to above 350° F., there will be flow of nylon from the inside diameter of the sleeve bushing, giving an extruded fin at the ends of the bearing.

At lower temperatures, the strains normally in an injection molded bearing may be released, permitting some warpage. This may increase or lessen the load, and thus the molding design becomes an

FASTER

than the "FASTEST THING IN FASTENINGS"

SPEED NUTS* in continuous strips

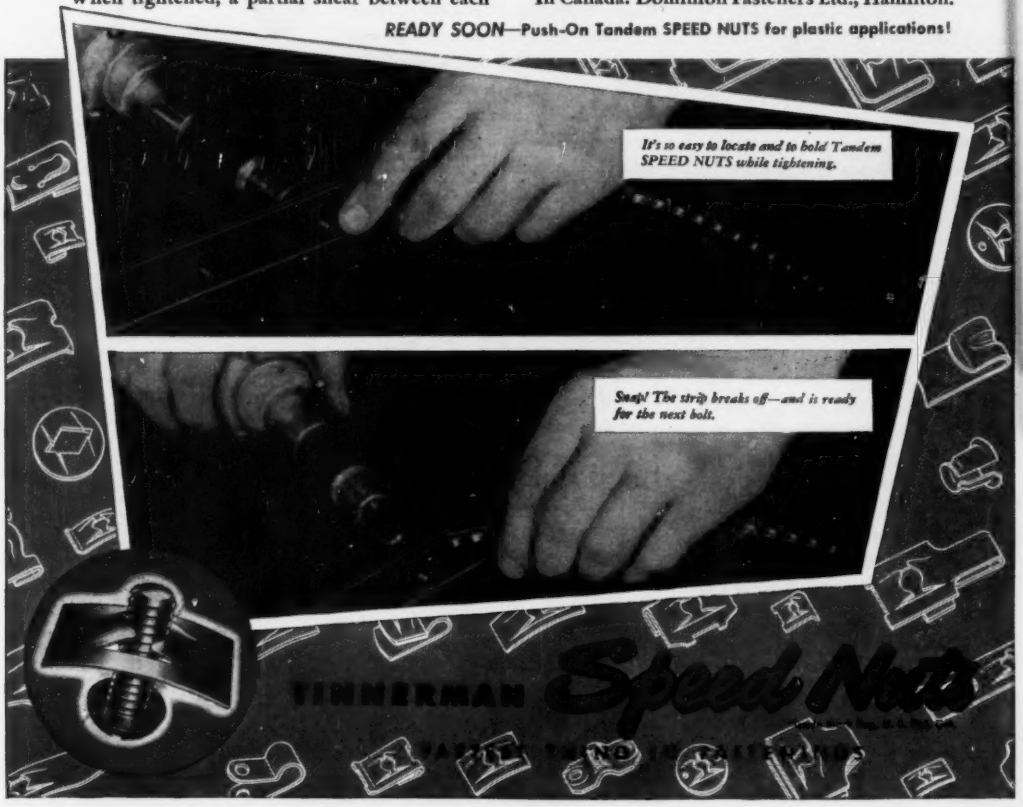
Now, assembly costs can be lower and savings higher than ever before. By producing flat-type SPEED NUTS in continuous strip form—Tandem SPEED NUTS—Tinnerman helps solve the critical problem of what to do about production costs.

No longer is the motion of selecting and picking up individual fasteners wasted. The SPEED NUT on the end of the strip is at the tip of the screwdriver at all times—so much easier to handle than an individual nut.

When tightened, a partial shear between each SPEED NUT permits the operator to break the strip away quickly, easily and cleanly—ready to move to the next location. Another saving—there's no loss from SPEED NUTS dropped on the floor.

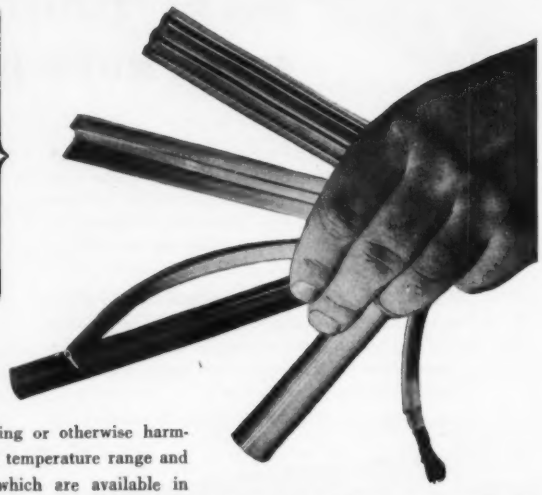
Ask your nearby Tinnerman representative—he's listed in major city phone directories—or write us for full details on this newest Tinnerman money-saver. TINNERMAN PRODUCTS, INC., 2040 Fulton Road, Cleveland 13, Ohio. In Canada: Dominion Fasteners Ltd., Hamilton.

READY SOON—Push-On Tandem SPEED NUTS for plastic applications!


It's so easy to locate and to hold Tandem SPEED NUTS while tightening.
Snap! The strip breaks off—and is ready for the next bolt.
TINNERMAN
Speed Nut

LOOK WHAT YOU CAN MAKE WITH MPM EXTRUDERS

CONSUMER PRODUCTS
INDUSTRIAL PRODUCTS
MEDICAL PRODUCTS



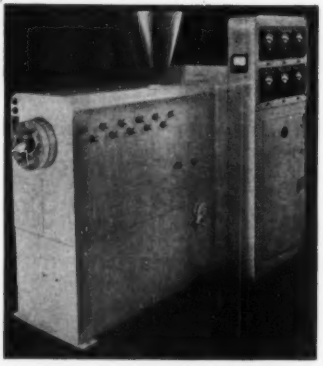
Typical production assignments economically handled by MPM extruders (top to bottom): fluted butyrate rod, acetate channeling, vinyl welting, multi-color acrylic rod, polystyrene tubing, nylon extruded over vinyl extruded over wire.

The range of products which you can produce with an MPM extruder is astounding . . . for instance, monofilaments for weaving upholstery materials, chemical tubing, rods for tool handles and other purposes, decorative channeling, insulated wire, flexible film for packaging, plain or multi-color belting, injection-molding pellets, rigid sheeting for buttons and phonograph record preforms.

Such product versatility is a direct result of the many superior, advanced features incorporated in the design of each MPM unit. An unexcelled heating and heat control system with six automatically controlled heating zones and nine, eleven, or fifteen cooling zones (depending on size of screw) equips your MPM extruder to extrude thermoplastics at high speed. And what's more, all parts of the extruder which contact plastic materials are of corrosion resistant materials throughout. This means an operator can clean the screw, hopper, cylinder, liner and other vital parts of the MPM extruder with a wire brush without any danger of scoring or otherwise harming them. The temperature range and screw speeds which are available in MPM extruders have made them the choice for experimental and production work in the laboratories of almost all leading material suppliers and extrusion plants.

Of extreme importance is the fact that MPM extruders are delivered *ready for operation*. Just plug into your electric current supply and attach a single water line and you are set for the low-cost extrusion of a host of products. Your extruder comes with a die for extruding rod stock, plus any other dies you may order.

MPM extruders are made in 1¼", 1½", 2", 2½", 3½" and 4½" sizes. Also available are conveyors, drying cabinets, granulating machines, special sheet windups, monofilament spooling equipment, wire covering equipment, etc.



Outline your production needs and if moderately priced MPM equipment can do the job, we will respond with complete details promptly.

modern plastic machinery corp. mpm

15 UNION ST., LODI, N. J.
CABLE ADDRESS MODPLASEX

important factor in setting recommended conditions for use of nylon bearings. This factor and others are the subject of continuing study.

Recent experience indicates that it is usually not desirable to mount thin-walled bearings by means of a press fit. Employment of a press or interference fit subjects the material of the bearing to high compressive stress, and the inherent tendency of nylon to release stress by cold-flowing is promoted by the temperatures developed in the bearing in operation, with two undesirable results. The release of the stress destroys the initial pressure of the bearing within the housing, by which it was held there, and the press fit is lost. The cold-flow of the nylon is toward the axis of the bearing, and thus decreases the initial clearance between bearing and shaft, so that the bearing may seize. The result in some cases is that the bearing freezes to the shaft and then rotates within the housing.

It is strongly suggested that the bearings be retained in accurately sized housings, without press fit or interference fit, by the use of an adhesive such as "Durez" 12041 or "Penacolite" G-1131. If mechanical means must be used, they should be designed to avoid application of excessive stress upon the nylon bearing.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, AND CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946, of MODERN PLASTICS, published monthly at Orange, Connecticut, for October 1, 1949.

State of New York }
County of Bronx } ss.

Before me, Notary Public in and for the State and county aforesaid, personally appeared Charles A. Breskin, who, having been duly sworn according to law, deposes and says that he is the Publisher of the MODERN PLASTICS and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (section 537, Postal Laws and Regulations), to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Chas. A. Breskin, 122 E. 42nd St., New York City.
Editor, Hiram McCann, 122 E. 42nd St., New York City.
Managing editor, A. Paul Peck, 122 E. 42nd St., New York City.
General manager, A. S. Cole, 122 E. 42nd St., New York City.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Modern Plastics, Inc., 122 E. 42nd St., New York City.
Chas. A. Breskin, 122 E. 42nd St., New York City.
Mrs. C. A. Breskin, 55 Park Road, Scarsdale, N. Y.
Linda S. Breskin, 55 Park Road, Scarsdale, N. Y.
Theodore B. Breskin, 55 Park Road, Scarsdale, N. Y.
Mrs. Helen K. Cole, 55 Elizabeth Rd., New Rochelle, N. Y.
S. Moisseiff, 55 Liberty St., New York City.
E. S. Gregg, 111—8th Ave., New York City.

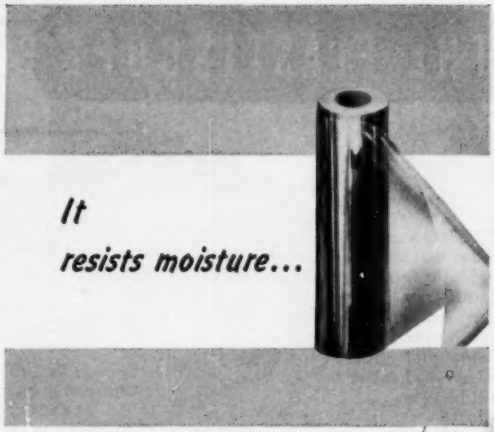
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

CHARLES A. BRESKIN, Publisher

Sworn to and subscribed before me this 8th day of September, 1949.

[seal] BENJAMIN WOLPER
Notary Public, State of New York
Qualified in Bronx County, No. 03-433-2200, Cert. filed with New York County Clerk, Bronx and New York Counter Registers
Term expires March 30, 1951



It's
KODAPAK SHEET
...Kodak's multi-purpose plastic

TRY IT: Kodapak II Sheet, for example, for electrical insulation. It has low moisture absorption and assures minimum corrosion failure. It winds tight at high speeds with maximum stretch—minimum breakage.

Two basic forms are available: Kodapak I Sheet, cellulose acetate, in gauges up to 0.060" in various colors and finishes; Kodapak II Sheet, cellulose acetate butyrate, in gauges up to 0.002".

Write at once for further information, including complete specifications, and for recommendations for practical end uses.

Cellulose Products Division
EASTMAN KODAK COMPANY
Rochester 4, N. Y.

Sales offices in New York, Chicago. District sales representatives in Cleveland, Philadelphia, Providence. Pacific Coast distributor: Wilson & Geo. Meyer & Co., San Francisco, Los Angeles, Portland, Seattle. Canadian distributor: Paper Sales, Limited, Toronto, Montreal.

"Kodapak" is a trade-mark

Kodak

THE PLASTISCOPE*

INTERPRETATONS OF THE CURRENT NEWS

By R. L. VAN BOSKIRK

Vinyl film price trends

THE price structure in the vinyl film industry has been of considerable interest and the subject for almost never-ending talk in the vinyl branch of the plastics industry. Every person interviewed has a different opinion on the factors involved and what the future trend will be.

In an effort to gain a representative viewpoint, two independent producers were asked to state their opinions for *The Plastiscope*. These opinions are passed on to our readers as the reflections of men who are neck-deep in the controversy:

"With quotations on 4-mil vinyl film varying all the way from the 40¢ to the 60¢ and over price range, it is quite obvious that the price structure is chaotic. In order to meet this situation, many film producers are almost certain to degrade their materials in one way or another. Today, every film producer knows how to make good film, but the pressure to meet a price results in the adoption of all sorts of methods that are harmful to the film industry.

"Film should be classified into a general type which could be used in table cloths, shower curtains, rainwear, cushions, mattress covers, etc. Such film should have oil, chemical, and water resistance with good tear and tensile strength. Then there should be specialty film for such things as drapes that don't need water resistance, for example. Such a film would be Grade A for drapes but Grade C for many other items.

"The only practical way that this can be done is for the producers to form a group to set up standards and obtain cooperation from their buyers so that they will buy according to the grading. I don't favor the label type of grading which is used in the woolen industry because it would only be a mass of chemical terms to the layman and neither he nor the chemist can determine the quality of a film by look or feel. It is therefore essential to grade it in a fashion understandable to the layman.

"In view of all the circumstances listed above, it is my firm conviction that the sooner the producers and the buyers set up standards of grading their film according to the end use for which the film is intended, the better off the industry will be." —*Robert Gordon, Gordon-Lacey Chemical Products Co.*

The next opinion:

"After a life time of experience in the textile industry where I have seen all sorts of attempts to meet competition by the single expedient of price cutting, I would say that vinyl film producers are heading into a serious situation if they continue to follow the present tendency to meet competition simply by cutting prices. Stabilization of the vinyl film industry will come only when all producers make an honest film which will meet the public's demand for the highest standard possible at the lowest cost. The use of inferior plasticizers or resins and loaded compounds will eventually turn the public away from vinyl film.

"The goal, of course, should be for each film manufacturer to produce a superior product so that his competitors will try to equal it, but it seems to me that we have quite the reverse of that situation in this industry, with many producers marketing a low grade film in order to meet the buyer's demand for a very low price. The urge to make a better film is being subordinated to the urge to make a film that will simply 'get by.'

"This situation could very likely result in the same thing that happened in the textile industry shortly before NRA, when quality was disregarded in order to meet low prices, and as a result nearly everyone in the business lost money and textile mills were dismounted and sold at ridiculous prices."—*J. P. Frank, Presto Plastic Products Co., Inc.*

Cast polystyrene

POLYSTYRENE CAST sheet, optically clear and flat as plate glass has been developed at the Cast Optics Corp. plant, 115 Jericho Turnpike, Mineola, N. Y. In small quantity production the cast polystyrene sheet can be sold at about two-thirds the price of acrylic—in large quantity production at about one-half. It is cast in 20 by 50-in. molds in any thickness from 0.040 in. up, and can be cut to any size desired. Forty by sixty inch sheets can be produced if there is a demand. Company officials claim that the cast sheet has surface quality superior to compression molded polystyrene sheets and has no strains or striations.

This new material can be drawn or formed on the same equipment and using the same technique as that used with acrylics. A coolant should be used when machining.

The surface of the present material is a bit less scratch resistant than acrylic, but technicians have developed a hard surface coating with which they are experimenting and which they believe will give their polystyrene sheet a surface hardness equal to CR-39 which has about the hardest surface known for this type of thermoplastic. If further tests substantiate present findings, it is believed that this low cost and rigid material will prove highly satisfactory for mirrors as well as many other optical and general uses.

The development work grew out of this company's years of experience in casting Columbia Chemical's Allymer CR-39, one of the first polyesters introduced to the trade. Latest successful products made from CR-39 cast material are military watch crystals which are now specified in Army Specifications.

New type acetate

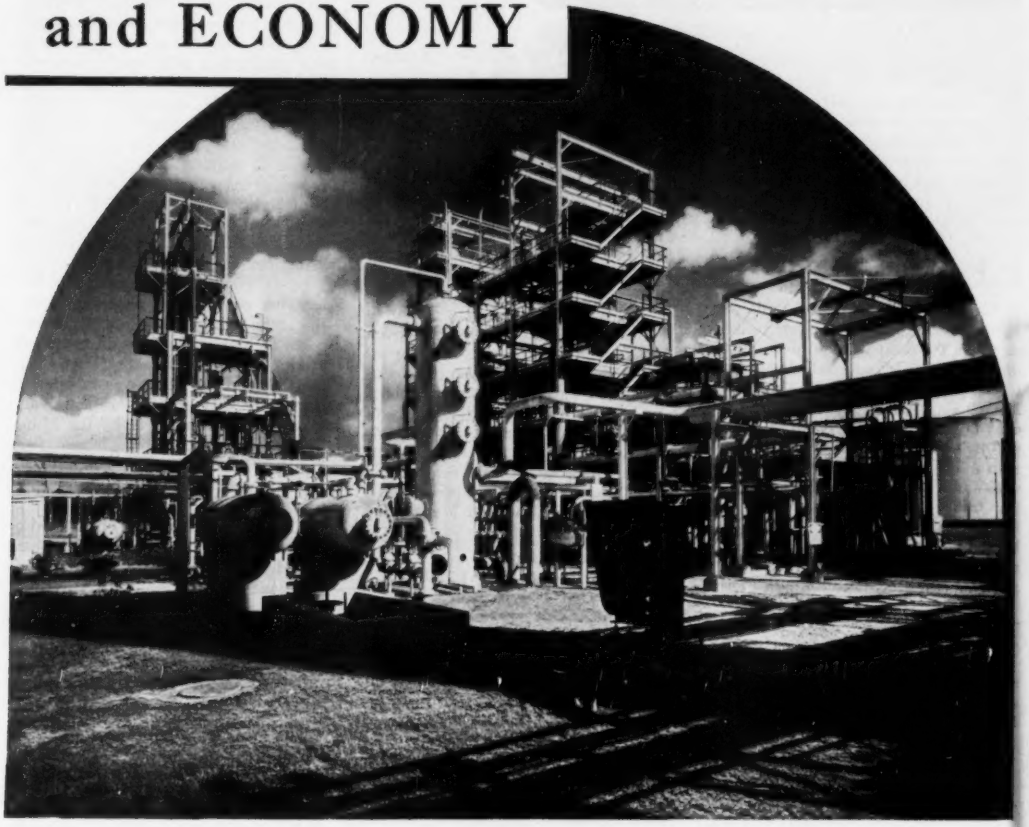
A NEW "boilable" cellulose acetate molding material which will withstand prolonged and repeated immersions of several hours duration in boiling water without distortion has been developed by the Hercules Powder Co., Wilmington, Del. The material, now in commercial use, is suggested for household applications where plastics components might require innumerable washings.

H. F. sealing nylon

A METHOD for heat sealing nylon fabric with a high frequency heat sealer has been developed by Edward J. Wohlfarth, president of Mayflower Electronic Devices Inc., 6014 Hudson Blvd., West New York, N. J., who reports that he has suc-

*Reg. U. S. Patent Office.

EFFICIENCY and ECONOMY



IN the planning and execution of expansion programs, Stone & Webster Engineering Corporation offers to industrial organizations the efficiency and economy resulting from a competent and coordinated engineering and construction staff with broad experience in all phases of design and construction.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.

THE PLASTISCOPE

cessfully sealed a nylon jersey material. Efforts to seal nylon in the past have been generally unsuccessful he says, because the material would crystalize or become stiff. He points out that fabricators with sealing machines may now have the advantage of handling nylon as well as vinyl film on the same machine.

Silicone price reductions

A CHANGE in the price structure of silicones has been announced to cover the entire range of products made from this material. According to the Dow Corning Corp., Midland, Mich., report, the company is reducing prices whenever the volume of business on a product will warrant a lower price. The newest prices will favor the development of uses for this highly versatile and high heat-resistant material, which has been held back only because of cost, according to capable critics in the plastics industry. The prices follow:

	Old price per lb.	*New price per lb.*
DC 200 fluids		
Pint	$6.15	$6.00
5-50 gal. drums and over	5.70	4.90
DC mold release fluid		
Pint	6.15	6.00
5-50 gal. drums and over	5.70	4.90
DC Antifoam A		
1-10 lb.	7.30	6.50
10-45 lb. drums and over	6.74	6.00
DC 4 ignition sealing compound		
1 lb.	6.80	6.45
2-50 lb. drums and over	6.26	5.88
DC 33, 41, and 44 bearing lubricants		
1-10 lb.	7.30	7.30
2-45 lb. drums and over	6.74	6.35

Plastics Exposition, 1950

THE exposition committee for the 1950 Plastics Show to be held at the Navy Pier, Chicago, Ill., Tuesday, March 28 through Friday, March 31, has announced that "packaged" exhibits for small space or one-booth users will be made available. This unit, while standard in form, permits variety in color application, type of lettering, shelving, counters, etc. used. The rental cost of such a basic display will be $700 maximum and will include rugs and furniture. The smallest booth space offered is a 10 by 10 booth renting at $250.

A strong drive is being made to secure attendence of buyers from department, chain, and mail order stores, engineers from the construction field, architects, wholesalers, etc., as well as industrial users of contract-made plastic components and users of custom plastic services.

There will be two morning meetings of S.P.I. members at the Stevens Hotel and a banquet on Wednesday evening, March 29.

Another vinyl film producer

REPORTED to have entered the vinyl film business within the last few months is the American Texolite Co., Mansfield, Ohio. According to our information, this company has leased a calender and the needed floor space from the Mansfield Rubber Co., which is controlled by General Tire and Rubber Co., Akron, Ohio. Capacity is said to be 60,000 yd. of vinyl film a day at the present time. Grapevine information says that the company contemplates the use of two more calenders in the near future. One of these calenders will go on a production line for the manufacture of embossed vinyl sheeting.

British polystyrene

IN 1948 Great Britain imported 1300 tons of polystyrene from Canada and the United States, and during the first six months of 1949 that figure was exceeded. Ninety percent of this imported styrene has, by Government regulation, to be used for export orders, only the odd 10% being allowed for molding goods to be sold on the home market.

Dow Chemical of Canada, Ltd., and Monsanto Chemical Co. (U.S.A.) share the British market, selling polystyrene at 1/6 to 1/9 per lb., depending on the color and grade. However, Erinoid, Ltd., a British firm hitherto identified with cellulose and casein plastics, has been operating a small scale plant on polystyrene production for some time and expects to satisfy a sizeable proportion of Britain's requirements in a year or so.

The styrene monomer is made for Erinoid, Ltd., by Petro-Carbon, Ltd., a comparatively new firm which is making a wide range of chemical intermediates from petroleum by catalytic processes. Apart from Erinoid, Ltd., Petro Carbon supplies styrene to Lewis Berger, Ltd., for paint manufacture.

Speculation is rife about the intentions of the Distillers Co., Ltd., the large whiskey and industrial alcohol combine. This firm commenced production of polystyrene (Distrene) in 1929, and the plant was in operation until the middle of the war, when it was taken over by the Ministry of Supply for the manufacture of other war material. The plant has never since been operated for the production of polystyrene.

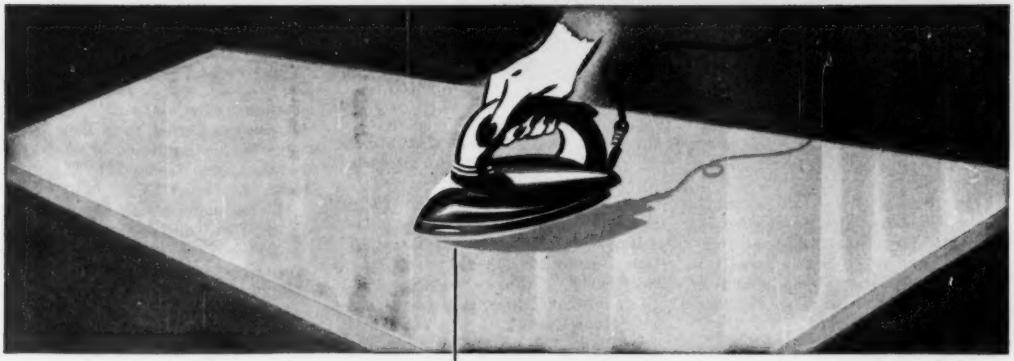
There is evidence to support the view that Distillers are interested in polystyrene, which would be a very useful addition to the selling range of some of its subsidiary plastics producing companies. Other British firms are reputed to be interested in the manufacture of polystyrene, and tentative plans are being drawn up for one large concern to produce the polymer from imported styrene.

It is considered likely that the price of British produced polystyrene will be in the region of 1/6 to 1/9 and that it will be a general purpose grade similar to the Dow material.—*John S. Trevor.*

Dow's plastics sales

PLASTICS accounted for 20% of the sales of The Dow Chemical Co., Midland, Mich., in 1948, according to its recently published Annual Report. Total sales of all Dow chemicals and magnesium were $200,000,000 as against $171,000,000 for the previous year.

Among interesting items in the report was one that Styrofoam production had been doubled during the year. A vinyl-vinylidene chloride plant having a capacity of 5,000,000 lb. per month was completed in 1948. Best known consumer development of the Dow Corning Corp., a Dow affiliate, has been its "Sight Savers," silicone-treated tissues for cleaning eye



NO. 5025 **PLYOPHEN**

cures so fast

at such low pressure

you could almost laminate with a flat iron

No. 5025 Plyophen is one of the most versatile of all phenol-base varnishes. It will impart excellent water resistance to paper or fabric laminates cured at any pressure from 10 to 1,000 psi and will cure $\frac{1}{8}$" panels in as little as 2 to 3 minutes at 325° F. These properties make it possible to produce in bag molds many articles hitherto produced only in autoclaves. Because No. 5025 Plyophen is odorless, it is extensively used for refrigerator door liners and in a wide range of applications as a filler sheet varnish. Write direct to the Sales Department at Detroit for a working sample and other suggested applications.

REICHHOLD CHEMICALS, INC. RCI

General Offices and Main Plant, Detroit 20, Michigan

Other Plants: Brooklyn, New York • Elizabeth, New Jersey • South San Francisco, California • Seattle, Washington • Tuscaloosa, Alabama
Liverpool, England • Paris, France • Sydney, Australia • Zurich, Switzerland • Milan, Italy • Buenos Aires, Argentina

THE PLASTISCOPE

glasses, now being sold in more than 80% of all drug stores in the United States.

The manufacture of limited quantities of saran fine fiber for developmental purposes was begun during the year in the Saran Yarns Co. plant at Odenton, Md., which is owned jointly with The National Plastic Products Co.

Polystyrene welding

FAST and permanent welding of polystyrene with its Rez-n-Bond, a fast-setting, free-flowing bonding agent, has been announced by Schwartz Chemical Co., Inc., 328 W. 70th St., New York 23, N. Y. Heretofore the material has been used to cement acrylic plastics.

Savings in production time up to as high as 85% with the non-inflammable adhesive are claimed by the manufacturer, who states that the tensile strength of the bonded area is as strong as the polystyrene itself. Rez-n-Bond is water-white and produces optically clear fused joints, according to the manufacturer, but is also available in a range of 21 colors so that fabricators can match colored polystyrene assemblies. It is packed in quart and gallon cans.

Plasticizers that stand aging

THE stability of Paraplex plasticizers G-25 and G-50 under continued high heat has been put to a severe laboratory test, with unusually fine results for vinyl compounds used in wire insulation, according to The Resinous Products Div., Rohm and Haas Co., Philadelphia, Pa.

A series of Paraplex G-25 and Paraplex G-50 stocks was aged for 5 and 12 days at 120° C. and evaluated for retention of physical properties, using tensile strength and ultimate elongation as criteria of heat stability. Obviously, such a test measures volatility as much as heat stability; any loss of plasticizer will appear as a change in tensile and elongation values.

The test was intended as a comparison between monomeric and polymeric plasticizers. G-25 and G-50 are polymeric. After 12 days of aging at 120° C., neither of the stocks containing polymeric plasticizers showed substantial changes in percent elongation or tensile strength.

Forty parts of G-25 and G-50 were used in each respective compound, with 60 parts of Geon 101 and 5 parts of lead carbonate. The polymeric plasticized stock outperformed the monomeric plasticized stock with which it was compared by a wide margin, according to the company's tests. Elongation of one polymeric plasticized stock changed only from its original 250% elongation to 290% after 12 days' aging at 120° C., and tensile strength changed only from 2350 to 2240.

High styrene latex

INSTALLATION of new high-pressure polymerization units which make possible large volume production of Polyco 350, a synthetic latex of interest to the paper, leather, and textile industries has been announced by American Polymer Corp., Peabody, Mass.

The compound is said to be a stable dispersion of a flexible high styrene copolymer resin. Its compatibility, toughness, flexibility, and age resistance make it particularly suitable as a replacement for casein in binding pigments in the manufacture of paper coatings, according to the manufacturer, who also suggests its use as a base for water paints; in the textile industry as a back sizing for pile fabrics; in leather finishes; and as a reinforcing agent for other synthetic latices.

Adhesive for plastics

A STRONG, waterproof adhesive called Magigrip for adhering rubber or plastic tile to concrete has been developed by the Adhesive Products Corp., 1660 Boone Ave., New York 60, N. Y. Requiring no heat or pressure, the adhesive is also recommended for adhering metal, cork, glass, and other materials.

Medium pressure phenolic

AN intermediate-pressure, general-purpose phenolic molding material which requires approximately half the pressure normally used for regular general-purpose materials, and called Durez 14646, has been announced by Durez Plastics and Chemicals, Inc., North Tonawanda, N. Y. The new material is designed to fill the gap between the company's low-pressure material, Durez 13527, and its regular general purpose materials such as Durez 791. On the Durez Tube Base Plasticity Scale, the ratios of the three materials are: Durez 791, 12; Durez 14646, 20; Durez 13527, 32.

The company states that the new material has excellent physical and electrical properties and surface finish. It is available in black, brown, and brown mottle. Complete data are available upon request.

Vinyl shoe linings

A FILM of specially compounded vinyl adhered to a cellulose-base sheet is now being used by a number of shoe manufacturers for quarter-lining and heel pads, according to Jules D. Lippmann, president of Textileather Corp., Toledo, Ohio. The Tolex-Textiloid material makes the product tougher than leather and is produced at a cost which is economical when compared with leather, according to company spokesmen. It is presently used mostly for men's shoes and is available in a wide range of colors.

Tapeless splicing veneers

A UREA formaldehyde resin adhesive which works equally well on either jointer or splicer applications, and which is designated as Uformite JS-508, has been announced by The Resinous Products Div., Rohm and Haas Co., Philadelphia, Pa. Used for tapeless splicing of veneers, it is asserted that the new adhesive has certain advantages over conventional gummed tape, such as near invisibility and elimination of the need for removing tape by soaking and sanding.

Vinyl coating for metal

STEEL tubing known as "Permatube" Electricweld, with a special rust-resisting finish of a Vinsynite pre-treatment and a pigmented coating with a vinyl resin base has been announced by the Jones & Laughlin Steel Corp., Pittsburgh, Pa. The plastic type finish was developed by Thompson and Co., Oakmont, Pa., and gives an almost impervious film on the metal surface.

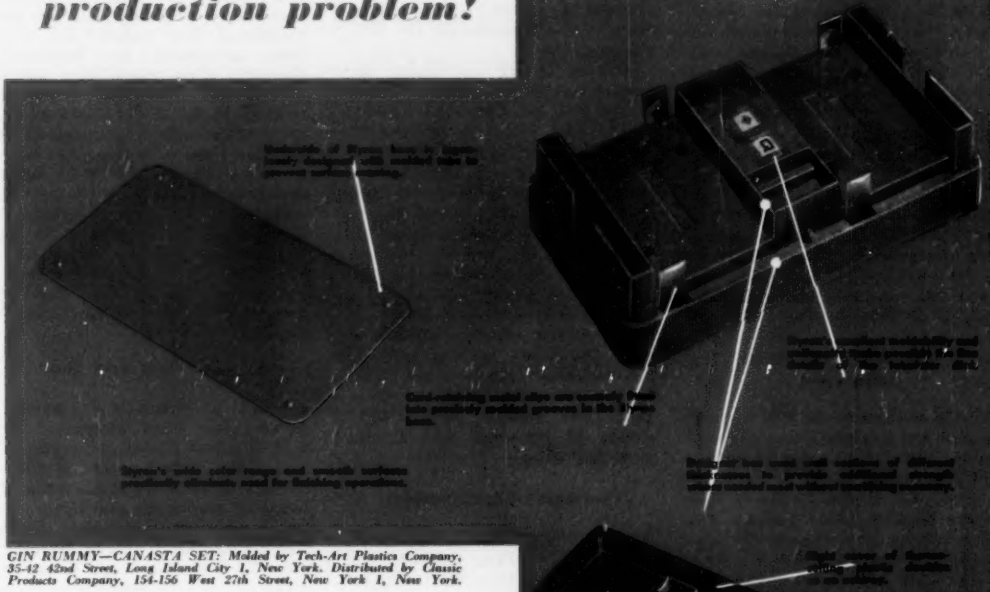
The new tubing can be fabricated by bending, expanding, flanging, fluting, or flattening without damage to the finish, which is said to flow with the metal and not to chip

THE CUSTOM MOLDERS' DESIGNING KNOW-HOW PLUS

STYRON

solves another production problem!

ANOTHER CUSTOM MOLDING CASE HISTORY



GIN RUMMY—CANASTA SET: Molded by Tech-Art Plastics Company, 35-42 42nd Street, Long Island City 1, New York. Distributed by Classic Products Company, 154-156 West 27th Street, New York 1, New York.

"Designed right—in the right plastic", briefly highlights the valuable services that the custom molder can offer you in solving difficult fabrication problems in plastics.

The custom molder maintains extensive design and engineering facilities to serve you. Staffed by technicians with long experience in engineering the correct plastic into finished products, these facilities furnish you with first-hand information on the properties and performance of various plastic materials.

The Dow Chemical Company works with Custom Molders to help them utilize Dow Plastics to the best advantage in your products. Write Dow today and let us put you in touch with qualified Custom Molders, who can solve your problem.

Plastics Division, Dept. T-58

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

DOW *plastics*

New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle • Dow Chemical of Canada, Limited, Toronto, Canada

THE PLASTISCOPE

or flake off within the limits of distortion of the steel. It is expected to find wide use in the manufacture of inexpensive outdoor structures and other applications where light steel tubular members are exposed to corrosive atmosphere.

In accelerated salt spray tests, "Perma-tube" was found to resist corrosion for more than 2000-hr. exposure and, in some cases, 3000 hr., whereas the ordinary electro-galvanized tubing obtained from commercial stocks started to corrode in 24 hr., according to the developers. "Perma-tube" also resists the action of caustic chemicals and acids and was found to have no corrosive effect after weathering tests equivalent to more than five years actual exposure to elements.

First large-scale commercial use of the new tubing is reported by The Ward Products Corp., Div. of the Gabriel Co., Cleveland, Ohio, in its "Minute Man Series" of television antennas. The series is designed to take advantage of the superior corrosion resistance and structural rigidity of "Perma-tube."

Ships chairs anchored with vinyl

CHAIR anchors made with a rayon core and a white Koroseal coating are now being used on the Farrell Lines' new ships, *African Enterprise* and *African Endeavor*. The plastic braided chair anchors are produced by the Paulsen-Webber Cordage Corp., 170 John St., New York 7, N. Y., to replace metal chains usually employed in dining saloons on ships.

Dinnerware merchandising

ANOTHER widespread advertising campaign has been launched by a plastics raw materials producer to help merchandise a finished product made from its material. The American Cyanamid Co. is featuring a series of full page four-color advertisements in consumer magazines from September through December to expand consumer markets for Melmac plastic dinnerware. The campaign in the consumer magazines has been preceded by an advertising and merchandising program published in the July, August, and September issues of magazines that cover distributors and merchandisers of dinnerware.

Sales kits for use by manufacturers' salesmen and by retailers will be made available to supply selling themes, point-of-sale material, radio commercials, display, and publicity suggestions.

Plastic transfer

CREDIT for the first completely plastic transfer for decorative marking is claimed by the Research Dept. of the Kaumagraph Co., Wilmington, Del.

Already in use on hosiery and knitted and woolen fabrics, the new plastic transfer, known as Kaumagraph "61", reproduces durable marking, according to the producer.

The operation is described as simple and speedy, requiring only the application of a heated iron to the back of the transfer. Colors are bright and clear, and the mark or lettering is reproduced cleanly. The marking can be dry cleaned and is unimpaired by acids, petroleum, solvents, grease, alkalies, alcohol, or soap. Decorative marking with the new plastic transfer does not roughen or stiffen the fabric. Company tests indicate that it withstands 50 washings without any damaging effects.

Thermoset improvements

DEVELOPMENTS of a fast-curing phenolic molding powder and of a powdered melamine resin for decorative laminating have been announced by the Plastics Div., Monsanto Chemical Co., Springfield, Mass.

The new thermosetting powder, designated Resinox 10900, is said to be a faster-curing, mica-filled, electrical grade phenolic molding powder with a cure rate two to three times faster than electrical powders now available and approximately equal to the curing speed of most general purpose materials.

The new development eliminates the problem caused by sacrificing electrical characteristics of "low loss" molding powders to obtain improvement in molding properties, acccording to company spokesmen, who state that Resinox 10900 achieves improved properties for these powders without loss in electrical characteristics. The material also releases readily from the mold with a rigid set, rendering it particularly suitable for molding around metal inserts.

Offered by the company in a wide flow range, the material is readily adapted to compression, plunger, and transfer molding techniques for both small and large complicated parts. This is especially true in the radio, television, or allied fields where optimum electrical properties combined with a fast molding speed are demanded, according to the company announcement.

Powdered melamine resin—Development of a powdered melamine resin, designated Resimene 820, for decorative laminating with an incorporated flow inducer has also been announced by Monsanto. Formerly such resins were available in syrup form only, according to E. S. Bauer of the Plastics Div. plant in Springfield, who stated that laminators using the powdered resin are in a position to treat their sheets to a lower volatile content, thereby obtaining higher gloss, dimensional stability, and higher abrasion. Or, he continued, the laminator may treat Resimene 820 to the same volatile content and have more flow or greenness in the finished treated paper.

Another vinyl variation

A NEW polyblend in dry powder form has been announced by B. F. Goodrich Chemical Co., Cleveland, Ohio. Designated as Geon Polyblend 500 X 479, it is a colloidal blend of vinyl resin and Hycar nitrile rubber which has been found suitable for either mill or Banbury mixing. It can be fluxed either on a hot mil or in a Banbury and can be calendered at 6 to 8 mils thickness.

An application for which it has already been used is as a liner material for handling raw rubber stocks in factory processing. It offers production economies for this purpose in that it can be recalendered over and over instead of being discarded as is generally done with materials now in use. In order to recalender, it is only necessary to warm the stock on a warm-up mill.

Styrene copolymer

GOOD-RITE Resin 50, the high styrene-butadiene copolymer manufactured by B. F. Goodrich

NIXON PLASTICS

SHEETS • RODS • TUBES

cellulose acetate (Nixon C/A)
cellulose nitrate (Nixon C/N)
ethyl cellulose (Nixon E/C)
cellulose acetate butyrate

•

rigid VINE-L sheeting

MOLDING COMPOUNDS

cellulose acetate
ethyl cellulose

for close personal service on orders large or small, contact . . . .

NIXON NITRATION WORKS

NIXON NEW JERSEY

Chicago Office: 510 N. Dearborn Street, Chicago 10, Ill.

THE PLASTISCOPE

Chemical Co., Cleveland, Ohio, will no longer be furnished in the standard 200-lb. Lever-Pak drum but in easier handling 50-lb. bags for the convenience of the trade, according to a company announcement.

Designed especially as a stiffening agent for rubber stocks, Good-rite Resin 50 is used in shoe soles, floor tiling, and insulation compounds providing such properties as high hardness, low gravity, good flex life, and excellent low temperature properties. A new 12-page illustrated technical service bulletin on Good-rite Resin 50, RC-2, is available to inquirers upon request. The bulletin contains compounding and processing information with typical formulas, tables, and graphs.

Vinyl shoe soles

DEVELOPMENT of vinyl shoe soles has had little publicity in the press, but an inquiry at B. Altman Co., one of New York City's largest department stores, reveals that it has been selling Balta-Tred vinyl shoe soles for at least four years. The store has advertised them as the "best buy" in shoe soles; according to its own tests the soles will last three times as long as leather. One complete line of the company's leather sole shoes for infant children and misses has been changed over to Balta-Tred, according to Altman. Eight schools are now buying these shoes from them.

The shoe sole is made by Plastics Div., F. C. Donovan, Inc., 192 South St., Boston, Mass. The shoe is assembled by Adams Brothers, Pittsfield, N. H.

Protective coating

ANNOUNCED as a lining for wood tanks and for protecting concrete floors in corrosive service is a thermosetting resin called Carbo-Flex recently developed by the Carboline Co., 7603 Forsythe Blvd., St. Louis 5, Mo. The material consists of a liquid and powder which when mixed has a mortar-like consistency and is applied by trowel. It can be applied to vertical surfaces in layers of about 1/16 in. without sagging. When set, the material is said to be hard, waterproof, and impervious to most corrosives and solvents up to 325° F., except nitric acid and sulfuric acid over 45% concentration.

Upon application, the material solidifies in from 2 to 20 hr., depending upon the temperature. It is very hard and relatively brittle but does have a flexibility of from 7 to 15%, according to company information, which prevents cracking in most general services. The product is said to have a compression strength of about 10,000 p.s.i.

COMPANY NEWS

Defiance Machine Works, Toledo, Ohio, sold its machinery and equipment at a public auction in Chicago Sept. 20 and 21, according to an announcement by president **H. D. Bennett** who also advised that the company's land and buildings comprising 175,000 sq. feet are available for sale or lease.

Panelyte Div., St. Regis Paper Co. has acquired from Time, Inc., a paper coating mill at Kalamazoo, Mich., which will be converted to production of laminated plastics. The plant is expected to be producing by January 1950 and will supplement the division's major plant at Trenton, N. J. The new plant has one-third the floor space of the Trenton plant where a $2,000,000 expansion program was recently completed, according to **C. Russell Mahaney,** general manager. **James E. Kussman,** associated with Panelyte at Trenton, becomes the Kalamazoo plant manager.

Synthane Corp., Oaks, Pa., has transferred **Edward W. Wilson** from its Chicago office staff to the sales department in its Milwaukee, Wis., office, as a direct sales representative assisting **Howard A. Tyner.**

E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del., has combined its **Plastics** and **Ammonia Depts.** into a single industrial department, effective Oct. 1.

The consolidated department will be headed by **Dr. Emil D. Ries,** former general manager of the Ammonia Dept., and its headquarters will remain in Wilmington. **Arnold E. Pitcher,** general manager of the Plastics Dept., was scheduled to retire from Du Pont on June 30 but was requested by the company's Executive Committee to remain until consolidation was effected.

The **Plastics Dept.** has plants at Arlington, N. J., Parkersburg, W. Va., and Leominster, Mass. The **Ammonia Dept.** operates plants at Belle, W. Va., near Charleston; and at Orange, Tex., and is building a new one at Victoria, Tex.

Polyplastics Co., 255 Conover St., Brooklyn, N. Y., manufacturers of plastic letters, television magnifying lens, and other plastic products, has now incorporated. Its corporation name, under the laws of New York State, is Polyplastic Forms, Inc.

Chas. Pfizer and Co., Inc., 630 Flushing Ave., Brooklyn 6, N. Y., developers of special plasticizers from citric acid, is celebrating its 100th anniversary in business. The company is particularly noted for its production of fine chemicals by fermentation and was one of the earliest producers of penicillin.

Insulating Fabricators, Inc., East Rutherford, N. J., has been appointed General Electric distributor for Textolite plastics surfacing materials. Insulating Fabricators has recently moved from New York City to a new plant in East Rutherford where a complete stock of the various patterns and colors of Textolite will be carried. **H. D. Randall,** for 21 years with General Electric, will be in charge of sales.

Shamokin Woolen Mills, Inc., 450 Seventh Ave., New York, N. Y., has appointed **Miss Beulah Charlat** as merchandising consultant to develop a plastic division for the firm. Miss Charlat has been associated with many home furnishings companies and most recently with such plastic film suppliers as **Protex Products Corp., Hartford Textile Corp.,** and **Harte and Co.**

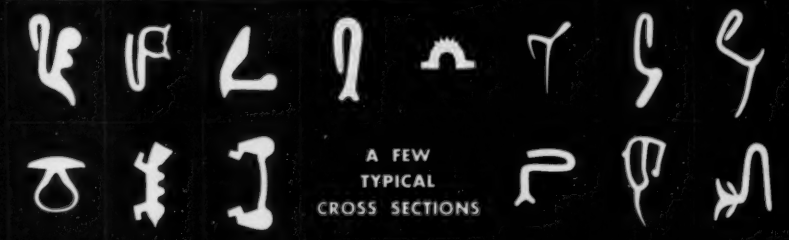
Plax Corp., Hartford, Conn., has established a Merchandising Services Dept. to aid its customers in exploiting the advantages of Plax-pak polyethylene packaging materials as aids to increased sales. The new department is under the direction of **Sigrid Aileen Duggan.**

Croasdale & DeAngelis, Inc., plastic fabricators in Lenni Mills, Pa., has announced the change of its corporate name to **CrystalX Corp.** Recently appointed to the company's staff as sales engineer is **E. B. Westlake, Jr.**

Victory Manufacturing Co., 1722 W. Arcade Pl., Chicago, Ill., has appointed **Leon Lawrence** sales manager of its **Consumer Products Div.** Mr. Lawrence was formerly sales manager of **Harlich Manufacturing**

YARDLEY

EXTRUDED
PLASTIC GASKETS
We make them for refrigerators, washing machines, steel windows, metal buildings and many other industrial applications where a tight seal is essential.
If you require pin-point accuracy in design and tolerances, consistently uniform . . . get acquainted with Yardley now.
Yardley engineers keep abreast with new materials and modern manufacturing techniques — can save you time and money by designing the right strip for your specific need.
We extrude—and fabricate—any thermoplastic material. There's an experienced Yardley representative near you. We will send him promptly.



YARDLEY PLASTICS CO.

142 PARSONS AVE. • ADams 9315 • COLUMBUS 15, OHIO

THE PLASTISCOPE

Co., Chicago, and most recently was with **Ben S. Loeb, Inc.**, of New York, N. Y.

The plastics molding company is expanding its line of plastic housewares and gift items and introducing an extensive line of advertising specialty and premium items.

Precision Extruders, Inc. was recently organized at 224 Center St., New York 13, N. Y., and will concentrate on extrusions and the fabrication of extruded parts and blow molding of polyethylene bottles. The equipment includes a 2½ and a 3½ in. **Modern Plastic Machinery Co.** extruder.

President of the new firm is **William Friedman**, a well-known packaging engineer. **Saul Senders** and **Irving Senders**, formerly of **World Plastex, Inc.**, are vice-president and secretary respectively. **Pierce T. Wetter**, formerly secretary of the Society of Mechanical Engineers, is a member of the staff; and **Orville "Pug" Sherman**, formerly with **Detroit Macoid Corp.** and **Celluplastic Corp.**, is in charge of production.

PERSONAL NEWS

Howard L. Chase has resigned as sales and service engineer on Lester injection molding machines for the New England representative, **Kavanagh Sales, Inc.** (Standard Tool Co.) to become general manager of **Greene Plastics**, Wakefield, R. I.

Tom K. Smith, Jr. has been named manager of plasticizers and resins sales for the **Organic Div., Monsanto Chemical Co.**, St. Louis, Mo. He replaces **Seth U. Shorey**, who has been appointed sales manager for **Organic and Phosphate Div.** products for the **Merrimac Div.**, Boston, Mass.

Roger Macdonald has been named plastics service representative for the New England and Eastern Sales District of the **Chemical Div., Koppers Co., Inc.**, with headquarters in the firm's New York office. Before joining Koppers, Mr. Macdonald was chemical engineer for **Plastic Manufacturers, Inc.**

Mario J. Petretti, general manager of the **Plastics Div., Noma Electric Corp.**, Holyoke, Mass., and national president of the Society of Plastics Engineers, has been named assistant to the president and production manager of **Rogers Plastic Corp.**, West Warren, Mass. Mr. Petretti has been connected with the plastics industry for 15 years and is also a past president of the Western New England section of S.P.E.

Dr. Malcolm M. Renfrew, formerly supervisor of product development for the **Plastics Dept.** of **E. I. du Pont de Nemours & Co., Inc.**, Arlington, N. J., has been named head of the **Chemical Dept., General Mills Research Laboratories**, Minneapolis, Minn. He succeeds **Dr. D. H. Wheeler**, who has been named head of technical sales service for **General Mills' Chemical Div.**

Sterling Melcher has joined the staff of the Builders' Supply and Flooring Dept., **Goodyear Tire and Rubber Co.** He will assist in establishing and directing Goodyear's merchandising program for its vinyl flooring materials.

R. W. McKirdy, formerly with **Hazeltine Electronics Co.**, is the new vice-president in charge of sales for **Plasteck, Inc.**, E. Port Chester, Conn.

Ross R. Williams, formerly of the **Plastics and Packaging Div., Monsanto Chemical Co.**, is now president of **Commercial Research Products Corp.**, 17 E. 42nd St., New York 17, N. Y., a group of development engineers which is making available, for licensing or sale, new product developments on which patents are issued or pending in many fields including packaging and plastics. The company has issued a brochure, "A Fresh Approach to New Product Development," which may be obtained on request.

John B. Eisen, formerly Group Leader with the **Chemical Research Laboratories, American Viscose Corp.**, Marcus Hook, Pa., and connected with that organization for 10 years, has joined the staff of the **Bjorksten Research Laboratories** as section leader at its Madison, Wis., laboratories.

Deceased

William F. Slomer, 71, former general sales manager of **The Fellows Gear Shaper Co.**, died August 4 at his summer residence in Hendersonville, N. C.

Herbert G. Goulder, 69, vice-president of **International Molded Plastics, Inc.**, Cleveland, Ohio, died Aug. 11 following a heart attack. He was for many years a recognized leader in the knit goods industry before becoming associated with his sons, **George V.** and **Richard J.**, in the plastics company.

MEETINGS

Oct. 31-Nov. 2—17th Annual Meeting Packaging Machinery Manufacturers Inst., Edgewater Beach Hotel, Chicago, Ill.

Nov. 1-5—Pacific Industrial Conferences, running concurrently with the Pacific Chemical Exposition, Civic Auditorium, San Francisco.

Nov. 4-5—Society of Rheology, Hotel New Yorker, New York, N. Y. Papers on flow behavior of various plastic materials.

Nov. 28-Dec. 3—22nd Exposition of Chemical Industries, Grand Central Palace, New York, N. Y. Exhibits will be devoted to raw materials, machinery, and products covering every recognized industrial and commercial application of chemical materials.

Nov. 30-Dec. 2—Annual Meeting, Society for Experimental Stress Analysis, Hotel New Yorker, New York, N. Y. Inquiries should be addressed to the Society at P. O. Box 168, Cambridge 39, Mass.

Dec. 4-7—Annual Meeting, American Institute of Chemical Engineers, Pittsburgh, Pa.

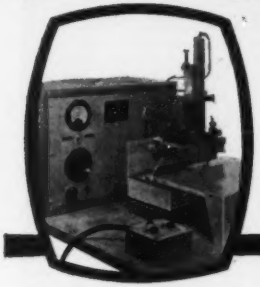
March 28-31, 1950—National Plastics Exposition, Navy Pier, Chicago. Restricted to trade only.

S.P.E. Meetings

Oct. 19—South Texas Section of S.P.E. in Houston. Howard S. Bunn, vice-president in charge of thermoplastic sales, Bakelite Corp., will speak on, "Applications of Molded and Extruded Vinyl Resins, and Polyethylene."

Oct. 19—Newark Section of S.P.E., will be guests of New York Section, 6 p. m., at the Hotel Shelburne, New York, N. Y. Gordon B. Thayer, Dow Chemical Co., will discuss "Injection Molding Design of Polystyrene."

Now Thermatron



offers a rugged Industrial type

CELLULOSE ACETATE ELECTRONIC HEAT SEALER

This new equipment embodies the time tested features which have made THERMATRON electronic heat sealing equipment the standard of the plastic sealing industry.

Send for special letter, "ELECTRONIC SEALING OF CELLULOSE ACETATE ON THE THERMATRON."

WITH THESE OUTSTANDING FEATURES

- No adhesive used.
- Clean transparent seals.
- Uniformity and consistency.
- High Production.
- Operated by unskilled help.
- Priced right.

A complete line of Electronic Plastic Sealing Equipment.

Thermatron
(a division of Radio Receptor Co. Inc.)
251 West 19th Street,
New York 11, N.Y.

RECLAIM YOUR PLASTIC SCRAP

With this high-output 10 hp FOREMOST grinder you can easily reduce your extrusion and injection molding scrap to evenly graded, moldable material at very low cost. It's adjustable to as fine as 1/8" mesh and has an automatic feeder. What's more, it's ruggedly built, easy to operate . . . accessibility of cutters insures low maintenance cost. Suitable also for rubber and leather.

Write for particulars

FOREMOST MACHINE BUILDERS, INC.
8231 51st Ave., Elmhurst, N. Y.

When you start using Atlas' non-migrating inks for printing your vinyl film, you can forget about interleafing to prevent "ghosting." These remarkable inks dry super-fast and positively do not mark off. What's more, they permit you to step up the running speed of your presses.

For multi-color "fall on" printing with photo-engraved rolls, a fully customer-tested concentrated color line is available. In addition, Atlas can supply a complete assortment of regular vinyl inks for roller and screen printing.

All Atlas ink products have proven their stability and printing quality under both favorable and adverse printing conditions.

Test samples are yours for the asking. Write . . . .

ATLAS COATINGS CORP.
5-35 47th Ave., Long Island City 1, N. Y.

All classified advertisements payable in advance of publication. Rates: $5.00 up to sixty words, enclosed in border, $10.00 per inch.

Classified Advertisements

For further information address Classified Advertising Department, MODERN PLASTICS, 122 East 42nd Street, New York 17, New York

MODERN PLASTICS reserves the right to accept, reject or censor classified copy.

EMPLOYMENT • BUSINESS OPPORTUNITIES • EQUIPMENT (USED OR RESALE ONLY)

Machinery and Equipment FOR SALE

FOR SALE: 100 Ton and 50 Ton Stokes Molding Press & Pumps; 300 Ton Dunning & Boschert, Molding Press; 300 Ton W. S. New Hobbing Press; 750 Ton Southwark Hobbing Press; 300 Ton W. S. Press 24 x 20 Platens; 175 Ton H. P. M. 30 x 30 Platens; 85 Ton Stewart Boiling 20 x 20 Platens With Electric Plates; 50 Ton 18" x 18" Elmes, With Electric Plates, Handpump Operated; 500 Ton Waterbury Farrel 3 Post Press; 800 Ton Waterbury Farrel 22" x 24" Platens; Stewart Boiling 50 Ton 14" x 14" Platens; 35 Ton Oilgear Shaft Straightener 84" Long Bed; Carver & Watson Stillman Lab. Presses; Hydro Pneumatic & other type Accumulators; Piston & Oil Pumps. AARON MACHINERY CO., 45 Crosby St., N.Y.C.

HYDRAULIC PRESSES REBUILT TO SPECIFICATIONS for plastic items, industrial purposes and phonograph record presses. We have in the used equipment (1) Baldwin-Southwark 8" x 8 ft. stroke, 2000# W. P. weighted accumulator $1000, (1) French Oil 3" x 42" stroke, 2500# W. P. weighted accumulator $600, (1) 400 ton, 32 x 45, 18" ram, 36" stroke, 12' daylight $2200, (1) 300 ton 30 x 46, 18" ram, 24" stroke, $1800, (1) 400 ton 22 x 30, 10" ram, 18" stroke, 36" daylight $1500, (2) 150 ton 42 x 46, 12" ram, 36" stroke, 60" day-light $900 each, (3) 24 x 24, 250 ton Southwark Presses with push-backs, 15¾" ram, 15" stroke, 33" daylight $1450 each. Hydraulic Sal-Press Co. Inc., 386-90 Warren Street, Brooklyn 2, New York.

FOR SALE—1—Watson Stillman Hydro-Pneumatic High and Low Pressure Accumulator System, complete; 1—Van Dorn Experimental Injection Molding Machine; Other Injection Molders up to 22 oz; 2—150 Ton Semi-Automatic Self-Contained Hydraulic Presses; 1—Royle 2½ Plastic Extruder 1¼" cylinder, other up to 8" cylinders; Two Roll Compounding Mills 6 x 12" up to 22 x 60"; Complete equipment for manufacture of molding powders. Send us your inquiries. CONSOLIDATED PRODUCTS CO. INC., 13-14 Park Row, New York 7, N. Y.

12 AUTOMATIC PHONOGRAPH RECORD PRESS UNITS Hydraulic Baldwin Southwark 50 ton automatic tilting head press serial #45580. Taylor Flex-O-Timer No. 179RJ311, 23 x 40 steam plate and double shelf table, (1) 1¼" hydraulic high and low air diaphram valve, (2) ¾" hydraulic air diaphram valves, (1) Vickers high and low pumping unit, 5 H.P. motor, regulating valves, 70 gallon tank, and cooling system. Price $1800.00. HYDRAULIC SAL-PRESS CO., INC., 386-390 Warren Street, Brooklyn, N. Y.

SAVE WITH GUARANTEED REBUILT EQUIPMENT-HYDRAULIC PRESSES: 26" x 24", 13" ram, 400 tons; 36"x36", 19" ram, 425 tons; 24"x42" 340 tons, 9-12" rams; 34"x40" 22" ram, 475 tons; 26"x24", 18½" ram, 800 tons; 24" x 24" 18" ram, 315 tons; 24" x 24", 12" ram, 170 tons; 42" x 42", 16" ram, 250 tons; 36" x 32", 14" ram, 355 tons; 36" x 36", 12" ram, 141 tons; 24" x 28", 10" ram, 116 tons; 20" x 20", 10" ram, 118 tons; 19" x 24", 10" ram, 78 tons; 22" x 15", 8" ram, 75 tons; 15"x15", 8" ram, 75 tons; 12"x12", 7½" ram, 50 tons; 12"x19", 6½" ram, 48 tons; 8"x8½", 4½" ram, 20 tons; 16"x16", 3½" ram, 12 tons; Laboratory press 30 tons 6"x6"; NEW DUAL PUMPING UNITS, ALL SIZES; Worthington Triplex 12 gal. 2200#, 4 plunger 6 gal. 2000#; Watson Stillman duplex box type 1 gal. 2500#; Worthington 1 gal. 10000#; NEW LABORATORY 6"x12" M. D. MILLS; Thropp 16" x 40" M. D. MILL; EXTRUDERS, NRM size 1½" and 2½" Units; PREFORM MACHINES; Stokes R&T, Colton 5 & 8½ T Mixers. Accumulators. Vulcanizers, etc. UNIVERSAL HYDRAULIC MACHINERY COMPANY, 285 Hudson Street, New York City 13, N. Y.

AVAILABLE AT BARGAIN PRICES Baker Perkins & Readco Heavy Duty 100-150 gal. Double Arm Jacketed Mixers.
J. H. Day 75 & 35 gal. Imperial, Double Arm Jacketed, Sigma Blade Mixers. Day 8 gal. Pony Mixer.
Day & Robinson 100, 600, 1000, 1200, 2400 & 4000 lbs. Dry Powder Mixers and Sifters.
Stokes & Colton Rotary, & Stokes Model T Single Punch Tablet Machines.
Mikro 24", 2TH, 1—8H Pulverizers, Jay Bee, Schutz-O'Neill, Stedman, Williams and Rietz Mills.
Package Machy. Cellophane Wrappers, Models FA, FA2, FAQ.
Hayssen and Knapp J. S. Auto. Wrappers. Many Other Items of Interest In Stock—Attractively Priced. Tell Us Your Requirements. Union Standard Equipment Co., 318-322 Lafayette Street, New York 12, N. Y.

SALE—One 16 oz. HPM injection machine—post-war like new—New York City area—Box C1042 Modern Plastics.

FOR SALE—One 400 ton Hobbing Press. One 150 ton Hobbing Press. With or without pumps. PLASTIC MACHINERY EXCHANGE, 426 Essex Avenue, Boonton, N. J. Tele.: Boonton 8-1615.

FOR SALE: Farrell 18" x 45", 16" x 48" & 15" x 36", 2 Roll Rubber Mills. New Lab 6" x 12". Other sizes 30" to 84". Royle 2 Perfected Extruder. 500 ton Hydr. Molding Press 42" x 48". Field 500 ton 25" x 30". Francis 200 tons 24" x 18". Albert 100 Ton 2 opening 24" x 24". 40 ton Broaching Press. Also presses 20 to 250 tons from 12" x 12" to 36" x 36". Watson-Stillman Hor. 4 plgr. 4" x 8" H. & L. Pressure Pump. HPM 1¾" x 6" vertical triplex 10 GPM 2700 lbs. 7 Hydr. Oil Pumps. Vickers, Oilgear, Northern, etc. Elmes 1" x 4" & 1¼" x 4" hor. 4 plgr. 5 to 8 GPM 4500 lbs. & 3500 lbs. Elmes 2" x 6" hor. 30 GPM 2500 PSI. Rumsey 4½" x 8" vert. Triplex 63 GPM 900 lbs. Elmes 2½" x 4" hor. 17GPM 850 lbs. Hydr. Steam Pumps. Low pressure Pumps 150 to 600 lbs. Hydr. Accumulators. Stokes Automatic Molding Presses. Stokes Rotary Preform Tablet Machines 1 3/16", 1¼" and ⅝", also single punch. Injection Molding Machines 2 oz. to 12 oz. Baker Perkins jacketed Mixers 200, 100, 50, 20, 9 & 0.7 gals. capacity. New and used Rotary Cutters. Rubber Mills, Calenders, Banbury Mixers, etc. Heavy duty Mixers, Grinders, Pulverizers, Gas Boilers, etc. PARTIAL LISTING. WE BUY YOUR USED MACHINERY. STEIN EQUIPMENT CO., 90 WEST ST., N. Y. 6, N. Y. WOrth 2-3745.

FOR SALE: Van Dorn Injection Press, (manually operated). Easy operation. 1 oz. capacity. Slightly used by owner only. Like new. Excellent for sampling materials, testing molds, small production runs. 110 volt current. New type spreader in heating cylinder for increased efficiency and speed. 20 second cycle practical on production runs. Price $600.00. Sloane Plastics, 21 Depot Square, Lexington, Mass.

1 Improved Paper Machinery Molding Machine Model VF Type 822 with 16 oz. Injection or 350T Compression. Our Cost $23,261.00.
1 RCA Electronic Generator Model 2BH M-1-13528. Our Cost $3,417.50.
1 Despatch Oven Co. Plastic Preheater. Our Cost $1,250.00.
2 Lupomatic Automatic Tumbling Barrels Each with 8 compartments. Our Cost $840.00 each..
1 Oil Mold Heater—Improved Paper Machinery Co. Our Cost $790.00.
1 Automatic Greaser. Our Cost $275.00.
2 6-cavity Compression 3 x 5" Index Card Box Mold. Our Cost $12,000.00. Will accept any reasonable offer for above. MUTUAL METAL & PLASTIC CORP., 671 Bergen St., Brooklyn 17, N. Y. CALL Main 2-8412.

FOR SALE: Injection Presses: 6 oz. Reed, 2, 4 and 16 oz. HPM, 6 and 8 oz. Lester, 6 and 8 oz. Watson, 1 oz. vertical NRM. Extruders: 1½", 2½" oil heated NRM, 4½" oil heat. Royle. Ovens, Granulators, Temperature Circulators. Apex rd. obj. printing mach. Preco Lab Press. 1—150 tons self cont. Compression press. 1—150 tons Stokes model 252 automat. closure Press. Pumps. Colton 5½ T Preformpress. 1—16 cav. Ice Cube Cub inject. mold. 1—12 cav. drawerpull inject. mold. Justin Zenner, 833 W. Sheridan Rd., Chicago 13, Ill.

SEVEN DOUBLE ARM heavy duty jacketed mixers up to 250 gal. cap. Stokes Rotary 16 punch pellet presses, heavy duty. PERRY EQUIPMENT CORP., 1529 W. Thompson St., Phila., 21, Pa.

FOR SALE—Slightly used 1" NRM Lab Model Extruder with following extras—single phase motor, special die for acetates, thermometer, thermostats, stand, and several experimental dies. Rubber belt conveyor with motor and variable speed arrangement, small drying oven. Must sell as a unit. All for $875 f.o.b. Rockford. Extrud-O-Lite, R. R. #5, Box 157, Rockford, Illinois.

FOR SALE—330 ton combination compression and transfer molding press with self-contained oil pump unit. Also R.F. heating unit, steam boiler and Stokes Preform Unit. All equipment in good condition and can be inspected at any time. Equipment can be purchased complete or in part. Reply Box C1043 Modern Plastics.

FOR SALE

Three 4-oz. Reed-Prentice injection molding machines. Write to:

Tilton & Cook Co.,

Leominster, Mass.

FOR SALE—French Oil Mill, 800 ton self-contained molding press, 42" x 36" platen, 48" daylight, 32" diameter x 20" stroke, 2000 lbs. W. P., good condition. Reply Box C1044 Modern Plastics.

FOR SALE—Two (2) Allis Chalmers Transformers. Type MBA Single Phase KVA 3 Continuous 50° C Rise, 60 Cycle, Primary Volts 450, Amperes 6.66, Secondary Volts 120, Amperes 25.0.

One (1) Westinghouse Motor. Frame 254, H.P. 5, 3 Phase, 550 Volts, 5.5 Amps per Line, R.P.M. 1755, 40° C Rise Cont. Reply Box C1045 Modern Plastics.

PLASTIC EXTRUDERS FOR SALE: One 2½" National, oil heated, and one 1" bench model laboratory National, electrically heated. Laboratory model has special extended screw and cylinder and special Wheelco indicating temperature controls. Machines can be seen in operation in advertiser's plant. Reply Box C 1072 Modern Plastics.

(Continued on page 192)

PROTECT and INSPECT with TRANSPARENT PLASTICS

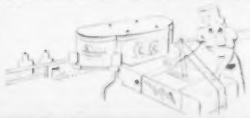
Transparent acrylic plastic is the ideal material to use when strength, transparency and the ability to be formed into simple or compound curves are desired. Acrylic plastic transmits every color of the spectrum with 92% efficiency, and retains its transparency permanently despite aging and weathering. That's why acrylics are the best material for shields and housings on all types of products where it is desirable to observe inner workings, or when a formed part must possess excellent optical properties in addition to strength and resistance to breakage.

Transparent acrylics can be furnished as a sandwich structure in which the center core is made of Butacite for obtaining greater strength and impact resistance. The laminating does not materially change the optical properties which, in turn, makes these materials ideal for aircraft canopies, instrument cases, machine safety shields, marine windshields, lighting shields, roof panels on busses and taxicabs, and a host of other applications.

Because of our long association with aircraft companies in developing new parts and helping solve production problems, you will find our engineering experience in the fabrication of acrylics most valuable in helping you adapt transparent acrylic plastics to your product.

Our long experience with fabricating aircraft parts has made us a leader in this field. Aircraft canopies and astradomes are among the many fabricated acrylic parts that roll continuously from our production line.

Curved windshields and windowpanes for boats can be successfully produced with fabricated transparent plastics.



For food, dairy, or processing equipment where the processed material must be observed, transparent acrylic plastics are becoming increasingly valuable.

We shall be glad to assign a staff engineer to work with you in solving any problems in plastics connected with new developments in the industry.

Swedlow PLASTICS CO.

3757 WILSHIRE BOULEVARD • LOS ANGELES 5, CALIFORNIA

CLASSIFIED ADVERTISING

(*Continued from page 190*)

Machinery Wanted

WANTED—Stokes Model #235, 50-Ton Automatic Molding Presses. Write, giving condition of machine, serial number and price. Reply Box C1000 Modern Plastics.

WANTED 2½" NRM Extruders; also dryers and granulators. Must be in A1 condition, ready to run without overhaul. John A. Parsons, Bainbridge, New York.

WANTED: One or two oz. used plastic injection molding press. Reply Box C1046 Modern Plastics.

WILL PAY CASH for injection machines, molds, extruders, grinders, other plastics machinery for foreign plant. Give make, size, serial numbers, age, condition, where located, price, all in first letter. Box C1047 Modern Plastics.

WANTED—Cumberland Scrap Grinder No. ½ and 1½. Reply Box C1073 Modern Plastics.

Materials For Sale

FOR SALE — BARGAIN

Surplus Nitrate Sheets

Approximately 100,000 Sheets .015 Cellulose Nitrate Clear 20" x 50" trimmed, first quality, packed 200 Sheets per case, price approximate 50% off list.

HYMAN DEBROVY & SONS,
326 E. Market St.,
Louisville 2, Ky.
Telephone Jackson 3352.

PLEXIGLAS FOR SALE AT 20% DISCOUNT

Clear grade 1A .080 sheets with original protective paper—556 pieces 19" x 26" at the very attractive price of .67 per sq. foot. Sold only as a lot. Display Corporation — 521 North Broadway, Milwaukee 2, Wisconsin.

LUCITE AND PLEXIGLAS
.060 Clear Grade A, Original Cases, Below List
.080 75¢ per sq.ft., .100 80¢ per sq.ft. .125 90¢ per sq.ft., .187 $1.10 per sq. ft., .250 $1.30 per sq.ft. No charge for cutting to size. Lucite Case Red ½" and ¾", below list. ARISTOCRAT PLASTICS INC., 55 Clarkson Street, N.Y.C. WAtkins 4-4216.

PLASTIC SHEETS — PLEXIGLAS Clear crystal. Fluorescent colors, Transparent, Translucent, Opaque. SHEETS—RODS—IMMEDIATE DELIVERY. United Plastic Signs, Box 168, Starke, Florida.

Materials Wanted

WANTED: PLASTIC Scrap or Rejects in any form. Cellulose Acetate, Butyrate, Polystyrene, Acrylic, Vinyl Resin, etc. Also wanted surplus lots of phenolic and urea molding materials. Custom grinding and magnetizing. Reply Box 318, Modern Plastics.

WANTED: Plastic Scrap. Rigid Vinyl, Cellulose Acetate, Polystyrene. Custom grinding, magnetizing and X-raying. Compounding time available. Franklin Jeffrey Corp., 1671 McDonald Ave., Brooklyn, N. Y. Es 5-7943.

PLASTICS PRODUCTS MANUFACTURER WILL BUY regularly, or job lots of polyethylene, styrene, and other plastics materials—virgin or scrap. Send full particulars in first letter with samples. State prices. Reply Box C1048, Modern Plastics.

Help Wanted

PLASTICS

Experienced plastic toy Manager for branch plant in Canada. Salary, share of profits. Unusual opportunity for man with initiative, who has business and plastic experience, to build a future for himself. In reply, give full particulars concerning previous background, and all other pertinent information. Reply Box C1049 Modern Plastics.

CHEMIST—Experienced in Polymerization of Styrene Monomer to manufacture of injection compound in all its phases. This is a very good opportunity for the right man with a reliable eastern firm. Your letters will be kept in the strictest confidence. Reply Box C987, Modern Plastics.

SALESMAN. To sell Vinyl sheets to fabricators. Must be experienced and come well recommended. To the proper person, this is an opportunity of a life time. All replies will be kept confidentially. Reply Box C988, Modern Plastics.

GENERAL FOREMAN. Old established firm in Chicago Area wants man familiar with compression and injection molding. Must have kept himself up-to-date with the newest methods and processes and be capable of handling personnel and getting top production from his employees. Give age, education, experience and salary required. Reply Box C1050, Modern Plastics.

WANTED

A capable Mold Room foreman with a minimum of 5 years experience in both compression and injection molding, including press maintenance and mold set-up. In addition to having the normally required attributes of a good leader, the applicant must have a thorough knowledge of the molding characteristics of plastics. Applicants must submit a complete resumé of their employment background, outlining in detail such experience as they feel particularly qualifies them for this position. Please state salary requirements. Reply Box C1051, Modern Plastics.

EXTRUSION SPECIALIST WANTED Capable of taking charge of development and production including compounding, machine set-up, and die design. This is an excellent opportunity for a thoroughly experienced man who is interested in a permanent position leading to a profit sharing or partnership basis. Reply giving complete details to Box C1052, Modern Plastics.

LABORATORY DIRECTOR. Chemist with experience in Fabric Coatings, particularly Vinyl and Pyroxilin. Must be progressive. Good opportunity for right person. Supply full details and recent snapshot. All replies confidential. Reply Box C1053, Modern Plastics.

Situations Wanted

LAMINATIONS, COATINGS, IMPREGNATIONS, EXTRUSIONS; Textiles, papers, films, metals. Production and development; both large and small company. Technical Director; Executive Vice-President. Wish to leave present connection. Available for half-days' arrangement in any technical phase of business. Ph. D. in Chemical Engineering. New York City area only. Reply Box C1054, Modern Plastics.

POSITION WANTED—Experienced Salesman desires connection with Manufacturer contacting Industrial accounts. Wishes to locate in Western New York State. Reply Box C1055, Modern Plastics.

NEW PRODUCTS—NEW BUSINESS Executive with outstanding background in product design and new product development desires to associate with a reputable plastics company or large merchandising organization. He is seeking a progressive concern located in east doing a volume of a million annually and interested in doubling this volume in the next few years by an aggressive program of new product design. He has an unusual record for increased sales through product design in housewares, appliances, toys, novelties, packaging, etc. He is interested in earning or buying an interest in this concern. Reply Box C1056, Modern Plastics.

AVAILABLE FOR PRODUCTION sales or administration. Recently completed task of establishing large injection-extrusion plant in Argentina as assistant plant manager. Young, with 1½ years experience in plastics, college graduate in production control. Not an engineer but with wide acquaintance of technical problems. Capable of setting up plant. Reply Box C1057 Modern Plastics.

MAN WITH 10 YEARS COMPRESSION, Transfer, and Injection experience. 1½ years as Superintendent, 8 years as foreman, wants job. Can furnish reference. Working as superintendent at present. Would like to stay in middle west, but would consider anywhere else. Reply Box C1058, Modern Plastics.

AVAILABLE: Practical man, 9 years experience in injection, compression, extrusion, and low pressure laminating. Familiar in all phases, including estimating, product design, tool design, sales service, production, material testing, and management. Can create and design. Prime requisite is opportunity for advancement. Graduate chemical engineer. I am 34 years of age, in good health and married. Reply Box C1059, Modern Plastics.

(*Continued on page 194*)

PUBLIC AUCTION SALE

By Order Of

LANCE MANUFACTURING COMPANY

5th & Courtland Sts., Philadelphia, Pa.

Sale Date: Oct. 5th, 1949, 10:30 A. M.

Inspection: Oct. 1st TO SALE DATE

ULTRA MODERN COMPRESSION MOLDING PLANT, TOOL, DIE AND MOLD SHOP

ALL MACHINES PURCHASED NEW 1942-1948

MOLDING PRESSES: Stokes #235 Fully Automatic; 2—50-Ton Standard High Speed Plunger Type; 1—#250-150 Ton Standard; 1—#250-200 Ton Standard.
PREHEATERS: 3—Model CB Airtronics; 1—La Rose Challenger Model.
MISC. MOLD EQUIPMENT: Model R Stokes Preform Press; Wallin Tappers; Bodine #40 Multiple Spindle Tapper.

COMPLETE, PRACTICALLY NEW MOLDS & DIES FOR MANUFACTURE OF ELECTRICAL WIRING DEVICES

ALSO **COMPLETE TOOL, DIE & PRODUCTION SHOP**
comprised of:

Jig Borer, Rotary Head Mill, Milling Machines, Drill Presses, Surface and Cyl. Grinders, Bliss High Prod. Press, A4-A2½ Niagara Presses, Shapers, Lathes, Inspection Equipment, Large Tool Crib, Factory Equipment.

SEND FOR CIRCULAR FOR FULL DETAILS

INDUSTRIAL PLANTS CORPORATION

90 WEST BROADWAY, NEW YORK 7, N. Y. (BArclay 7-4185)

Auctioneers Liquidators Appraisers

CHICAGO, ILL. TOLEDO, OHIO DETROIT, MICH.

AVAILABLE:

VALUABLE SALES TOOL

Reprints of any article which appears in Modern Plastics are available at extremely moderate prices.

Many business organizations regularly distribute such reprints to customers and prospects as a matter of goodwill and service. Other companies equip their salesmen with reprints of pertinent Modern Plastic's articles to bolster their sales story.

If there is any feature in this or other issues of Modern Plastics which can be of value to you in reprint form, ask for quotations *right now.*

Address your inquiry to . . .

INDUSTRIAL MAGAZINE SERVICE

AN AFFILIATE OF BRESKIN PUBLICATIONS

122 East 42nd Street, New York 17, N. Y.

. . ."IMPOSSIBLE," they said.

. . ."No, '*IRRESISTIBLE*'," we replied.

Eyebrows went sky-high when fanciers of all-metal lipsticks got their first look at the plastic-metal container we recently developed for IRRESISTIBLE LIPSTICKS, New York — (and are they selling!).

Why all the excitement? Well, they found that Connecticut Plastic Products Co. had precision-engineered *two* plastic parts to do the work of four or five metal parts. Enclosed in eye-catching metal end pieces, our design not only works smoother, but costs materially less to produce. And that's important these days!

Moral: If there's a way to cut costs, improve performance, or make a product more competitive through creative application of plastics — Connecticut knows it.

For better injection molding — next time — Call on Connecticut!

CONNECTICUT PLASTIC PRODUCTS CO.

70 W. Liberty Street Waterbury, Conn.

CLASSIFIED ADVERTISING

(*Continued from page 192*)

Situations Wanted (cont'd)

POSITION DESIRED BY YOUNG MAN with 10 years experience as General and Production Manager. Experienced cost, fabrication and molding; tools, dies and mold design and construction; Shop problems. College, engineering and practical experience background. Knowledge of sales and contacts. References. Would like to locate in the south or east coast area. Presently employed, available in 30 days. Reply Box C901, Modern Plastics

CHEMICAL ENGINEER. PHD 1948, 10 years experience in research, teaching, development, pilot plant, production of organic chemicals, resins, plastics, rubber, fibers; compounding and application of adhesives, latex varnishes, paint coatings and impregnants; extrusion, injection compression molding; techniques in polymerization of monomers. Desires permanent position in East. Reply Box C1060, Modern Plastics.

EXTRUSION FOREMAN with large concern—knows new set-ups, die construction, can hold close tolerances (±.002), excellent color matcher. Would like to stay in present field or enter the fields of 1. Preparing molding powders (coloring, extruding & Pelletizing) or 2. Sales-Engineer for extruded products or 3. Development work —Young, aggressive. Desires steady days in N. Y. area. Reply Box C1073, Modern Plastics.

Molds For Sale

2 CAVITY INJECTION MOLD DIE. Smart design, housewave item, molded part weight 1 oz. Best offer takes. New condition. Reply Box C1061, Modern Plastics.

FOR SALE AT GREAT SACRIFICE
Brand new costume jewelry lapel pin mold. Built at a great cost in designing, engraving and tool making. Actual cost to build $5000. Sale price $1800. Fit 8 oz. Reed-Prentice or H.P.M. Don Manning & Co., 135 Leighton Avenue, Rochester, N. Y.

FOR SALE Several Multiple Cavity Compression Molds for novelty bakelite boxes at fraction of original cost.
High Hat 6¼" x 5½" x 3⅝"
Book Box 8⅛" x 4⅛" x 1 9/16"
Samples of finished boxes furnished. Reply Box C1062, Modern Plastics.

Molds Wanted

WANTED TO PURCHASE
Obsolete or discontinued Plastic Injection Toy Molds. State condition and best cash price. Reply Box C1036, Modern Plastics.

WANTED: Discontinued Injection molds of tooth brush handles, musical instruments and toys, harmonicas, standard buttons, cigarette holders, etc., etc. Quote with samples in duplicate. Reply Box C1063, Modern Plastics.

WANTED
Ball mold about 2¾" in diameter. Must be in good running condition. Send samples. Write Box C1064, Modern Plastics.

WANTED MOLDS—Obsolete or temporarily discontinued items for rental or purchase for Stokes 150 ton Std. compression molding presses for use overseas. Reply box C1065, Modern Plastics.

Lines Wanted

LINES WANTED—On distributor or manufacturers representative basis for Kansas or could include Colorado. 20 years sales experience, own building in center of Kansas, town served by three railroads, also truck lines so am in position to warehouse if wanted, working one salesman now, can secure another experienced man if needed. Reply Box C1066, Modern Plastics.

MANUFACTURERS REPRESENTATIVE Located in Los Angeles desires lines for West Coast or Southern California area in rubber and plastic raw materials, semi-finished materials, and equipment. Native of the territory. Chemical Engr. Degree. Knowledge of trade. Established office. F. C. Crowhurst & Company, 405 Towne Avenue, Los Angeles 13, California.

TOYS WANTED
FOR NATIONAL DISTRIBUTION
Active, experienced toy sales organization desires line or items for national distribution for chain stores, department stores and jobbing outlets on representation basis. Show Room Fifth Avenue Building Toy Center. Sales guaranteed under three month trial basis or no deal. References. Reply Box C1067, Modern Plastics.

WANTED—A line of stock molded plastic flower pots and plastic watering cans for a rated manufacturer of steel housewares, established 1903, with 42 salesmen throughout the U. S. Reply Box C1068, Modern Plastics.

PLASTIC LINES WANTED
Sales Representative in South Texas, familiar with plastics, graduate of "Plastics Industries Technical Institute" would like to market products as manufacturers representative on commission basis. 36 years old, 15 years sales experience. Excellent references. V. C. Whisenant, 713 Birdsall St., Houston, Texas.

Representatives Wanted

WANTED
SALES REPRESENTATIVES
by established manufacturer of complete line mold sets and component parts. Engineering background desirable. Straight commission, territories protected. Areas available: Chicago, Cleveland, Pittsburgh and parts of New England. Write in detail, confidentially. Reply Box C1027, Modern Plastics.

WANTED
Manufacturers Representatives
Established Midwestern extrusion firm with modern equipment desires to expand sales representation. Need men with engineering and sales experience in Minneapolis, Cleveland, Cincinnati, and Detroit. Commission basis. Reply stating qualifications. Reply Box C1069, Modern Plastics.

RESIN MANUFACTURER wants representative experienced in sales PHENOLIC and UREA Resins—liquid and powder. Will make permanent commission or salary arrangement, or both, as desired. Confidential. Our men know about this advertisement. Reply, Box C1070, Modern Plastics.

Miscellaneous

YOUR ATTENTION PLEASE!
For sale or royalties, patent pending on plastic, envelope moistener, will retail above $2.50. This moistener is simple to make, is attractive and has great marketing possibilities through regular merchandising channels, department, chain and stationery stores. L. Paul, 327 W. 28th St., New York City 1.

SALE OR LEASE

PLASTIC PLANT

BULK OR PIECEMEAL

Former plant of Cleveland Container Co. at Ogdensburg, N. Y. Fifteen injection molding presses, together with other necessary auxiliary equipment and super fine buildings. If you are interested in any part or all of this fine plant, contact us at once.

HETZ CONSTRUCTION COMPANY
M. C. 37 Warren, Ohio
Phone: Niles, O. — 2-2509

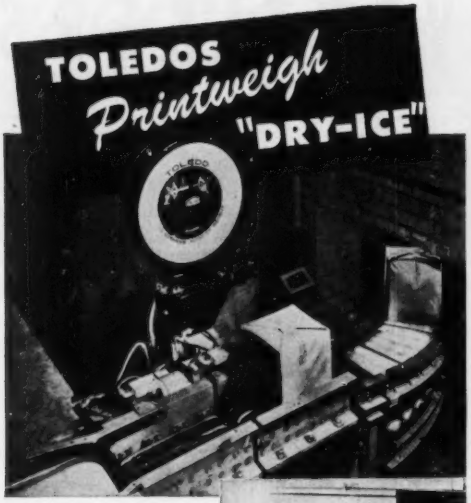
CONTRACT MANUFACTURER—WANTED presently molding with plastisols to manufacture unique items, patents pending. Reply Box C1071, Modern Plastics.

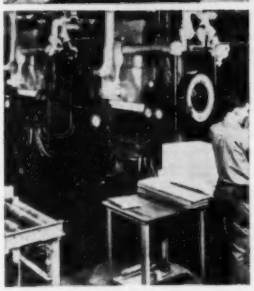
WANTED: Complete plants, also individual items such as: Mixers, grinders, 2-roll mills, extruders, etc. Reply Box C1019, Modern Plastics.

IF YOU HAVE GOOD HYDRAULIC PRESSES with modern pumping equipment for sale send me your specifications of same with photo, and I will see to it that you will get the best price available. Announcing: Hydraulic Sal-Press Co., Inc., formerly Sal's Press, located at 386-390 Warren St., Brooklyn, N. Y. Will continue to render its usual good service.

PATENT RIGHTS for sale or License. Patent, 2,415,209, GROMMET SPINDLE. Pat. Feb. 4th 1947. A moulded, all-plastic, grommet spindle for use in manually producing cotton string grommets which are essentials in ship building and repairing. Figures embossed on the ends of the spindles indicate the diameter of the spindle. Accurate measurements; flexible molding at low cost; international markets. Write, Morten B. Michelsen, Antonito, RFD 164, Colorado. (Group 37-31-32-30-81. Register No. 8,195.)

PEGS * SAWDUST
COMPOUND — MIXTURES
Kew Bee Kut compound mixtures now being produced. It has more cutting qualities than the ordinary grades.
Square Kut Pegs***Italian Pumice, fine and lump grades. Write for particulars. National Sawdust Co., Inc., 82 N. 6th St., Brooklyn 11, N. Y.





Accurate printed weights... with Toledo Printweigh Scales... *control costs* at key points in production of "DRY-ICE" at the Chicago plant of Pure Carbonic Incorporated.

Above is the Toledo Automatic Check-Weigher, which checks the weight of packaged ice en route to loading dock. The Check-Weigher has a remote head with Printweigh (photo at right) conveniently located in shipping office. This Toledo prints the weight of the blocks on a continuous strip... keeps truck shipments straight!

Toledo Printweigh also provides an accurate printed record of the output of hydraulic presses which produce blocks of "DRY-ICE" four times the size of the packaged block (lower right). Keeps production records straight!

Look to Toledo to provide the vitally important ACCOUNTING facts on receiving, shipping and production that mean accurate control of inventory, costs and profit! Send for bulletin 2020 on Modern Weight Control. Toledo Scale Company, Toledo 12, Ohio.

TOLEDO

HEADQUARTERS FOR SCALES

CONTINENTAL

makes them all and thousands more

Of all the 400,000 varieties of fastenings that literally hold our industries together, Continental makes a large proportion marketed under the famous HOLTITE trade name. Most of them are standard — screws, nuts, and bolts for every use in every industry. Others like the well-known HOLTITE-Sems and HOLTITE-Phillips screws are patented specialties and the famous HOLTITE-Thredlock, Locktite and Tap screws were first designed and produced by Continental. Sometimes a fastening engineered by HOLTITE for one industry finds an unexpected use in another. Often a HOLTITE-*Engineered* fastening will replace several parts that a manufacturer is using. Discuss your fastening requirements with a Continental Sales-Engineer. He will focus on your requirements all the broad industrial-fastening experience and ingenuity of Continental. Remember Continental is constantly improving HOLTITE products, lowering their cost and broadening service.

ENGINEERED FASTENINGS FOR PRODUCT ENGINEERS

A. A typical flat head HOLTITE steel woodscrew. Continental makes a complete range of sizes with either slotted or Phillips heads.

B. Special Phillips "HOLTITE-Thredlock" door hinge screw eliminates lock washers and other locking devices giving improved performance when subjected to vibration.

C. Dial adjusting screw specially designed for bathroom scales. Screw inserted in frame is swaged against square shoulder under head. Completed part engages scale leveling mechanism to allow screw driver adjustment.

D. Beater drive shaft for a home electric mixer. Continental engineered this unusual part and produced it economically by cold heading process. Head end is welded to the beater unit. Knurled section provides grip for motor chuck.

This Trademark

HOLTITE

T. M. REG. U. S. PAT. OFF.

means made by —

CONTINENTAL SCREW COMPANY

1904 NEW BEDFORD, MASS., U.S.A. 1949

MODERN PLASTICS ADVERTISERS

OCTOBER, 1949

Ace Plastic Co. 124
Acromark Company, The 136
Adamson United Co. 32, 33
Aldrich Pump Co., The 26
Allied Chemical & Dye Corp., The Barrett Div. 115
Allied Products Corp. 173
Allis-Chalmers Mfg. Co. 17
All Purpose Gold Corp. 148
American Anode Inc. 50
American Cyanamid Co., Plastics Div. 106, 107
American Molding Powder & Chemical Corp. 137
Anderson Bros. Mfg. Co. 126
Atlas Coatings Corp. 189
Atlas Electric Devices Co. 199
Atlas Valve Co. 146
Auburn Button Works, Inc. 153

Bakelite Corporation Inside Back Cover
Bakelite Corporation 21
Baldwin Locomotive Works, The 63
Ball & Jewell, Inc. 30
Bamberger, A., Corp. 120
Barco Mfg. Co. 22
Barrett Div., The, Allied Chemical & Dye Corp. 115
Becker, Moore & Co., Inc. 158
Blodgett, G. S., Co., Inc., The .. 170
Boonton Molding Co., The 145
Borden Co., The, Chemical Division 62

Cadillac Plastic Co. 173
Cambridge Instrument Co. 174
Carborundum Company, The ... 135
Carpenter Steel Co. The 34
Carver, Fred S., Inc. 144
Cast Optics Corp. 160
Catalin Corporation of America 1
Celanese Corporation of America, Plastics Div. 9
Chemical Exposition 132
Chicago Molded Products Corp. 28, 29
Classified 190, 2, 4
Columbia Protektosite Co., Inc. 64
Columbian Carbon Co., Magnetic Pigment Div. 150
Connecticut Plastic Products Co. 193
Continental Screw Co. 195
Creative Plastics Corp. 12
Crown Machine & Tool Co. 11
Cruver Mfg. Co. 46
Cumberland Engineering Co., Inc. 161

Deecy Products Co. 138
Detecto Scales, Inc. 124
Detroit Macoid Corp. 51
Detroit Mold Engineering Co. .. 157
Detroit Stamping Co. 132
Dow Chemical Co., The 183
Drew, E. F., & Co., Inc. 59
Dunning & Boschert Press Co., Inc. 163
DuPont de Nemours, E. I., & Co., Inc., Electrochemicals Dept. . 141
DuPont de Nemours, E. I., & Co., Inc., Plastics Dept. 7
Durez Plastics & Chemicals, Inc. Inside Front Cover

Eagle Tool & Machine Co. 162
Eastman Kodak Co. 177
Electric Auto-Lite Co., The 4
Elmes Engineering Div. of American Steel Foundries .. 65
Emery Industries, Inc. 68
Erie Resistor Corp. 139

Fabricon Products, Inc., Plastics Div. 162
Farrel-Birmingham Co., Inc. .. 155
Fellows Gear Shaper Co., Inc., Plastics Machine Div. 151
Ferro Chemical Corp. 166
Ferro Enamel Corp. 144
Foredom Electric Co. 145
Foremost Machine Builders, Inc. 189
Formica Co., The 61

General Electric Company . Back Cover
General Industries Co., The, Plastics Div. 10
Gering Products, Inc. 127
Girdler Corporation, The, Thermex Div. 119
Goodrich, B. F., Chemical Co. .. 3
Goodyear Tire & Rubber Co., Chemical Div. 41
Gotham Plastics Corp. 45
Gries Reproducer Corp. 126

Hardesty Chemical Co., Inc. 174
Hercules Powder Co. 27
Heyden Chemical Corp. 31
Hinde & Dauch Paper Co. 43
Hydraulic Press Mfg. Co., The .. 13

Industrial Plants Corporation .. 193

Jackson & Church Co. ...., 54, 55
Jackson & Church Co., & R. H. Windsor Ltd. 38, 39

Kingsley Stamping Machine Co. 143
Kohnstamm, H., & Co., Inc. .. 163
Koppers Co., Inc. 24, 25
Kurz-Kasch, Inc. 48

Lane, J. H., & Co., Inc. 142
Lester Engineering Co. 137
Lucidol Div., Novadel-Agene Corp. 172
Lupo Research Laboratories 158

Mack Molding Co., Inc. 199
Marblette Corp., The 110
Martindell Molding Co. 141
Mayflower Electronic Devices, Inc. 146
Mearl Corporation, The 156
Mears-Kane-Ofeldt, Inc. 142
Metasap Chemical Co. 42
Michigan Molded Plastics, Inc. .. 154
Mico Instrument Co. 138
Midland Die & Engraving Co. . 96
Miller, Frank & Sons 160
Mills, Elmer E., Corp. 35
Minnesota Plastics Corp. 40
Mirro-Plex, Inc. 128
Miskella Infra-Red Co., The ... 150
Modern Plastic Machinery Corp. 176
Molded Products Corp. 36
Monsanto Chemical Co., Organic Div. 53
Monsanto Chemical Co., Plastics Div. 23

(*Continued on page* 198)

ANOTHER OLSEN PLASTIVERSAL

—the Universal Testing Machine for Tension-Compression & Flexure Testing of Plastics

Illustrating a compression test on plastic gears, showing clearly the special fixture for mounting and exerting strain against the gear teeth.

The Olsen Plastiversal in use at Continental-Diamond Fibre Co., Bridgeport, Pa., shown with Loading Rate Indicator, High Magnification Recorder and Multi-Mask Dial.

Photographs courtesy of Continental-Diamond Fibre Company

The Olsen Plastiversal is designed especially for the varied and exacting requirements of the plastics industry. With this compact unit, precision tests can be made in tension, or flexure on film, sheet, or molded specimens. Thick plates, blocks, or other objects can be tested to heavy loads in flexure and compression.

The ample working clearance and long stroke, with positive testing speeds infinitely variable over a very wide range, are some of the features which combine to make the Plastiversal of inestimable value if you are testing plastics.

TINIUS OLSEN

Testing & Balancing Machines

TINIUS OLSEN
TESTING MACHINE CO.
2050 Easton Rd., Willow Grove, Pa.

Tinius Olsen Testing Machine Company produces a complete line of plastic physical testing machines —
WRITE TODAY FOR BULLETIN No. 23.

VISIT THE METAL SHOW — October 17th to 21st — Booth 1830 — Cleveland, Ohio

ADVERTISERS INDEX

(*Continued from page 196*)

Mosinee Paper Mills Co. 113
Moslo Machinery Co. 125
Mt. Vernon-Woodberry Mills .. 44
Muehlstein, H., & Co., Inc. 149

National-Erie Corp. 149
National Rubber Machinery Co. 165
National Vulcanized Fibre Co. . 172
Newark Die Co. 143
New Hermes 152
New Jersey Machine Corp. 57
New York State Dept. of Commerce 133
Nixon Nitration Works 185
Northern Industrial Chemical Co. 165

Olsen, Tinius Testing Machine Co. 197

Parker-Kalon Corp. 121
Pfizer, Chas., & Co., Inc. 60
Plaskon Div., Libbey-Owens-Ford Glass Co. 102, 103
Plastics Development Corp. 173
Plastic Molding Corp. 161
Plastics Industries Technical Institute, Dept. of West Coast University 164
Plax Corporation 56
Precise Products Co. 161
Preis, H. P., Engraving Machine Co. 156
Price-Driscoll Corp. 128
Printing Industries Equipment Inc. 157
Prophylactic Brush Co. 52
Pyro Plastics Corporation 125

Quinn-Berry Corporation 16

Radio Receptor Co., Inc. 189
Reed-Prentice Corporation 8
Reichhold Chemicals, Inc. 181
Respro Inc. 49
Richardson Co., The 6
Rohm & Haas Co., Plastics Div. 123
Rohm & Haas Co., Resinous Products Div. 171
Ross, Charles & Sons Co. 148

Schwartz Chemical Co., Inc. .. 152
Scott Testers, Inc. 153
Sindar Corporation 157
Standard Tool Co. 164
Stokes, F. J., Machine Co. 20
Stone & Webster Engineering Corp. 179
Stricker-Brunhuber Corp..... 133
Sturtevant Mill Co. 37
Swedlow Plastics Co. 191

Tennessee Eastman Corp. 117
Thermoplastic Fabrics Corp. .. 67
Thropp, Wm. R., & Sons Co. . 154
Timken Roller Bearing Co., The 66
Tinnerman Products, Inc. 175
Toledo Scale Co. 195
Tupper Corporation 58

Van Dorn Iron Works Co., The 131
Victory Mfg. Co. 136

Waljohn Plastics, Inc. 169
Waterbury Companies, Inc. 163
Watson-Stillman Company .. 14, 15
Welding Engineers Inc. 18, 19
White, S. S., Dental Mfg. Co. .. 170
Wiegand, Edwin L., Co. 47
Windsor, R. H. Ltd. 147
Worcester Moulded Plastics Co. 200

Yardley Plastics Co. 187

Zenith Plastics Co. 129

IS YOUR COMPANY GOING TO BE LISTED IN THE 1950 DIRECTORY SECTION?

The Directory Section of the 1950 MODERN PLASTICS ENCYCLOPEDIA and ENGINEERS' HANDBOOK will serve as the foremost buying guide during 1950 for users of plastics materials, machinery, and custom work and services of very kind.

IF your company was listed in the 1949 Directory Section, you will automatically receive a 1950 Listing Sheet.

IF your company was not listed for 1949, you are urged to write for a 1950 Listing Sheet immediately so your firm may be included.

Listings are free. It will be to your company's profit and advantage to be listed.

Listing Sheets will be mailed during the week of October tenth. They **must** be returned on or before Monday, October thirty-first. Any listing received after this deadline cannot be included.

Remember — you will receive your 1950 Listing Sheet by mail **without requesting it** if your company was listed in the 1949 Directory Section. However, you must **request** a 1950 Listing Sheet if your company was not included in the 1949 Directory Section. Address this request promptly to:

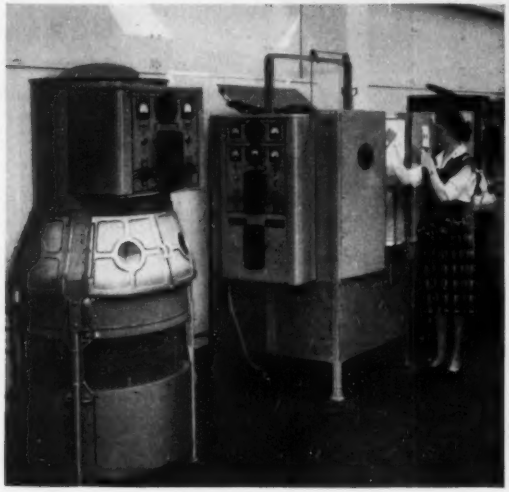
DIRECTORY EDITOR

1950 MODERN PLASTICS ENCYCLOPEDIA and ENGINEERS' HANDBOOK

122 East 42nd Street New York 17, New York

ATLAS-OMETERS

. . . used in Quality Control for plastic or rubber products at B. F. Goodrich Company



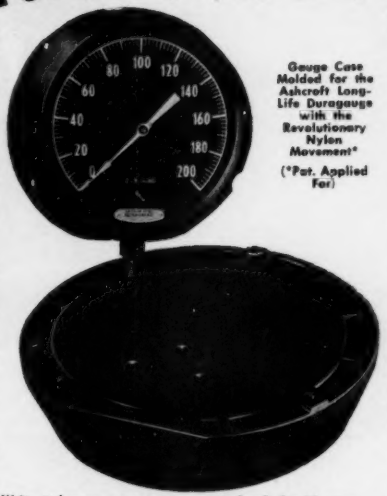
An important part of the tests at B. F. Goodrich Company Laboratories involves subjecting products to the destructive effects of weathering conditions they will be expected to meet in service. By using Atlas Fade-Ometers and Weather-Ometers it is often possible to obtain quickly, in advance of actual service, assurance that new materials will have satisfactory resistance to cracking, sun-checking, chalking, fading or bleeding of color, or to loss of elastic properties.

In the Fade-Ometer—used to check the reaction of any material or type of finish to the deteriorating effects of sunlight—plastic materials such as Koroseal are tested for permanence of bright color. The Weather-Ometer—which accurately duplicates rain, heavy dew, sunlight and thermal shock—offers complete control of these elements so that any desired climatic cycle can be obtained. Results of tests in the Weather-Ometer are used in the evaluation of the aging and weathering characteristics of rubbers and plastics under accelerated conditions corresponding to outdoor exposure.

The machines are easy to operate, fully automatic, and may safely be left in continuous operation overnight without attention from the operator.

ATLAS ELECTRIC DEVICES CO.
361 West Superior St., Chicago 10, Illinois
WEATHER-OMETERS • FADE-OMETERS • LAUNDER-OMETERS

Mack MOLDS FOR THE LEADERS—



Gauge Case Molded for the Ashcroft Long-Life Duragauge with the Revolutionary Nylon Movement* (*Pat. Applied For)

Write today on your company letterhead, for 12 page Booklet D which describes complete Mack facilities.

Insure your plastic molding jobs with MACK experience!

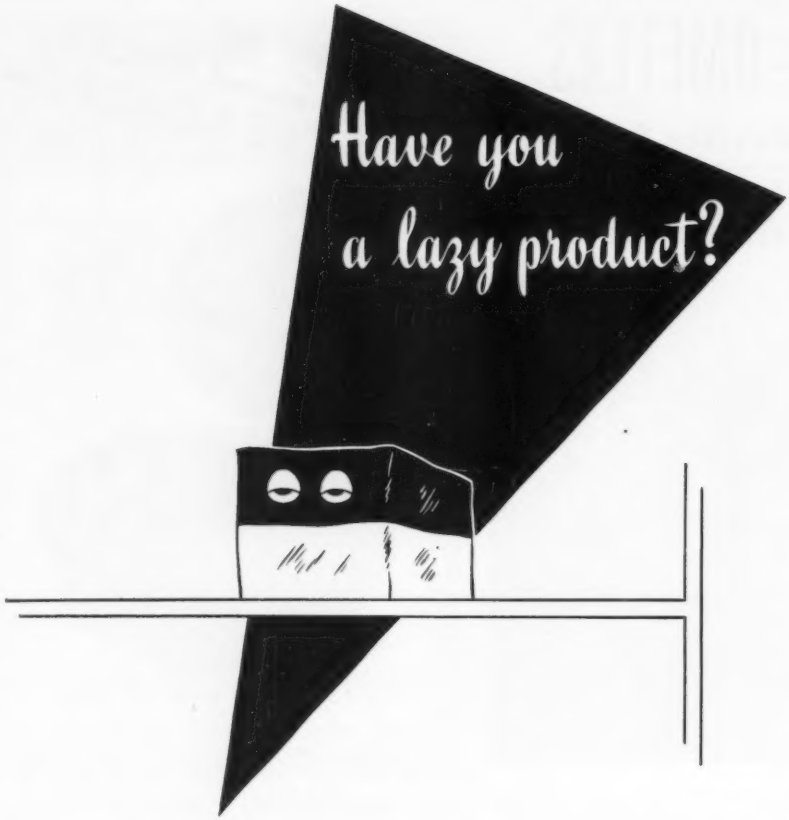
DESIGN

MOLD MAKING

MOLDING

Letting MACK figure it in plastics is good business, anytime. At MACK you receive the full benefit of experience that goes back to the early days of the plastics industry. If, on examination of your problem, we feel that the use of plastics is not the proper method, our engineers will so advise you. MACK means sound planning from choice of material and mold design to finishing. That's why a finished job from MACK will pay its way—every time! For complete service, contact Mack Molding Co., Inc., Main Street, Wayne, New Jersey.

THIRTY YEARS
MACK MOLDING IS ONE OF THE *ORIGINAL* PLASTIC MOLDING SPECIALISTS
Mack MOLDED EXCELLENCE



Give it a wmp treatment

We at Worcester Moulded Plastics are frequently presented with the problem of a product that lacks the sales appeal necessary for rapid turnover on dealers' shelves. Our experienced personnel takes pride in the solution of such problems. From die designer to inspector our every effort is bent to the successful redesigning of customers' products in durable, practical plastics to turn lackadaisical loafers into sales "go-getters". What we have done for others, we can do for you. If you have a product that's a slow seller, let us plastically revamp it for you. There are cases where the resulting increase in sales more than paid the cost involved.

wmp

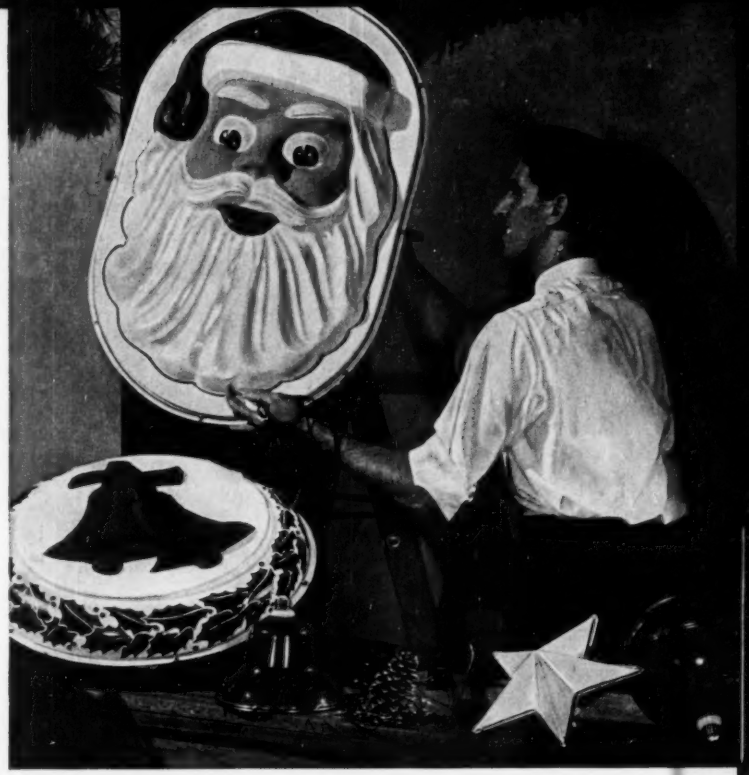
Custom Injection Moulding

WORCESTER MOULDED PLASTICS CO.

14 HYGEIA STREET, WORCESTER 8, MASS.

17 East 42nd St., New York 17, N. Y.

ATTRACTIVE VINYLITE Plastic rigid sheet is easily formed into three-dimensional shapes such as lighted stars, bells, balls and wreaths for holiday decorations. These by General Plastics Corporation.



Win Customers... Influence sales

with VINYLITE Plastic BRAND Rigid Sheet

Why have products made of VINYLITE Plastic rigid sheet won nation-wide acceptance?

Because this amazing material offers a unique combination of lasting beauty and dependable performance, tailormade for the specific application.

Here is the key to the overwhelming acceptance of VINYLITE Brand Plastic rigid sheet by market wise manufacturers. They know that it can be depended on for undeviating quality. Discover how it can be put to work for your products. Write to Department GU-7,

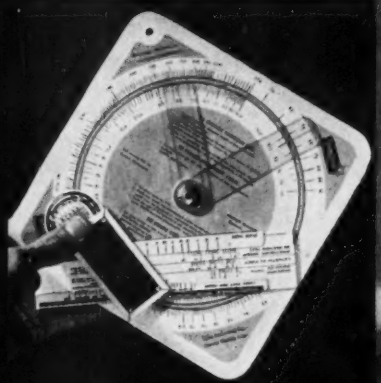
BAKELITE CORPORATION
Unit of Union Carbide and Carbon Corporation UCC
30 East 42nd Street, New York 17, N. Y.

You know it's right if it's...

Vinylite BRAND **PLASTICS**

BAKELITE CORPORATION

ACCURATE calculating instruments result from the exceptional dimensional stability of VINYLITE Plastic rigid sheet. Non-warping, they take printing to close tolerances. By The Emeloid Co., Inc.



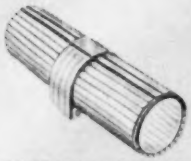
TOUGHNESS, abrasion resistance, transparency are inherent in this VINYLITE Plastic rigid sheet Harley-Davidson motorcycle windshield by Midland Plastics Inc. and G. Felsenthal & Sons, Inc.

CLOSE REGISTER, multicolor printing on VINYLITE Plastic rigid sheet makes possible eye-catching displays. Translucency allows dramatic back lighting for striking effects at low cost. By Hopp Press, Inc.

MOLDED IN PLASTICS BY GENERAL ELECTRIC

"Fragrance Bar" and "Cinderella Slipper" display packages molded by General Electric for Coty, Inc.

LARGE VOLUME JOBS! G. E. is ideally equipped to mold large quantity jobs—like this soap dispenser for the Voorhis-Tiebout Co.



LOW SELLING PRICE! Using G-E plastics for a paper cup dispenser enables the Dixie Cup Company to offer a low-cost home unit.

PLASTICS FOR INSULATION! This contact shaft, molded by G. E., furnishes its own insulation, retains dimensional stability.

Plastics

How G-E Plastics Can HELP SELL YOUR PRODUCTS

Here's an excellent example of how G-E plastics help to sell products. These eye-catching plastics packages —the slipper-shaped perfume holder (acrylic) and the toilet water "Fragrance Bar" (polystyrene)— were both molded by General Electric for Coty, Inc. Each unit combines sales appeal with ready-to-work utility . . . makes an attractive display in the store or on a dressing table.

This kind of imaginative packaging provides the added sales life that moves merchandise. But whether you can use plastics packages, or molded plastics parts or products, you can depend on General Electric plastics service for low cost and high quality.

One of the world's largest plastics molders, G. E. is ideally equipped for *large volume* production. WRITE US FOR MORE INFORMATION on how this service can work for *you*. Or contact your nearest G-E sales office. Address: Plastics Division, Chemical Department, General Electric Company, 1 Plastics Avenue, Pittsfield, Mass.

GENERAL ELECTRIC

CD49-A47

General Electric plastics factories are located in Coshocton, Ohio; Decatur, Ill.; Taunton and Pittsfield, Mass.